EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON KNOWLEDGE AND SELF CARE FOR PREVENTION OF SECONDARY LYMPHEDEMA AMONG WOMEN WHO UNDERWENT AXILLARY DISSECTION FOR BREAST CANCER SURGERY AT KMCH, COIMBATORE

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A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

OCTOBER 2017

CERTIFICATE

This is to certify that the Dissertation entitled **"A STUDY TO ASSESS THE EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON KNOWLEDGE AND SELF CARE FOR PREVENTION OF SECONDARY LYMPHEDEMA AMONG WOMEN WHO UNDERWENT AXILLARY DISSECTION FOR BREAST CANCER SURGERY AT KMCH, COIMBATORE"** is submitted to the faculty of nursing, **THE TAMILNADU Dr. M. G. R. MEDICAL UNIVERSITY, CHENNAI,** by **Reg. No.301510453** in partial fulfilment of requirement for the degree of Master of Science in Nursing. It is the bonafide work done by her and the conclusions are her own. It is further certified that this dissertation or any part these of has not formed the basis for award of any degree, diploma or similar titles.

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SL NO	ACRONYMS	ABBREVATIONS
1	ALND	Axillary Lymph node dissection
2	SLN	Sentinel lymph node
3	SLND	Sentinel lymph node dissection
4	BRCL	Breast cancer related lymphedema
5	MRM	Modified radical mastectomy
6	MLD	Manual lymphatic drainage
7	BMI	Body mass index

CHAPTER - I
INTRODUCTION

Health is the fundamental rights of every human being. Unfortunately health cannot be given or disturbed but has to be actively acquired and won. It is difficult to know when the state of health ends and state of disease begins. A healthy person is an asset to himself, to his family and to his community. Feminine appearance is said to be enormously important to the self-image of every women. Female breast has been regarded as a significant component of feminine beauty, sexuality and motherhood. The development of breast in the female indicates her approaching womanhood and emphasis her feminity. (Sabah, 2012)

The most common cancer and cancer related death among women in developed and developing country is breast cancer. As more women survive from breast cancer, the number of women affected by treatments side effects increasing. After breast cancer surgery, secondary lymphedema is one of the long-term complications and is associated with adverse physical and psychosocial consequences.(Oren,2010)

Globally, breast cancer is the most frequently diagnosed cancer in women about 1.38 million new cases per year. 50000 cases in women and 400 in men are recorded every year in UK. There are 458,000 deaths per year due to breast cancer in both developed and developing countries and is the common cause of female cancer death. (Suzanne 2013).

The American Cancer Society In 2015 reported approximately 231,840 new cases of invasive breast cancer alone with 60,290 new cases of in situ. Based on GLOBOCAN 2015 estimate, about 14.1 million new cancer cases were 60,290 additional cases of in situ breast cancer.

As per 2012 statistics, there were about 1.7 million women diagnosed with breast cancer worldwide. One out of eight women in U.S. develops breast cancer during the course of their lives. The burden of breast cancer has shifted to less developed countries which currently account for about 57% of cases. The 5-year relative survival of women diagnosed with breast cancer has increased from 80% to 89% today relative to age-matched women without the disease. Breast cancer ranks second cause of cancer death

among females in developed countries and in developing nations. In 2012 about 8.2 million women died with breast cancer worldwide and in 2015 about 40,290 breast cancer death has occurred.

Breast cancer is the second most common cancer in woman worldwide, about 1.7 million new cases diagnosed in 2012.It represents about 12% of all new cases and 25% of all cancer in women. (World Cancer Research Fund International, 2012)

According to World Cancer research fund International (2008) breast cancer is the major cause of death among women worldwide. It indicates that the total number of breast cancer will increase to 2.1 million by 2030. Breast cancer incidence is higher in Europe, Australia, New Zealand and North America. The incidence rate is low in Asia, Central America and Africa. Breast cancer is the second common cancer with more than 25% of new cases.

In India, more than 7.6 lakh people are affected by breast cancer and one third among them is dying every year. By 2025, the number of cancer patients in India will increase by five times. The report also revealed that by 2025 the number of cancer patients in developed countries such as America will be doubled. Presently three percent of the population in India is suffering from one or other type of cancer. According to ICMR report more than 5.55 lakh Indians have died due to cancer. (ICMR, 2016)

Top most cancers are breast cancer, lung cancer, prostate and cervical cancer. Lung cancer accounts for almost one third of all cancers in India, which is more prevalent in males. Cancer of the breast is the first commonest cancer affecting females. The total number of cancer in India are likely to range from 9, 79,786 cases in the year 2010 to 2011 to 11, 48,757 cases in the year 2020. (National Cancer report program, 2010)

Primary approach to breast cancer treatment is usually through surgery. Other treatments are usually not always employed to surgery and are referred to as adjuvant therapies. According to National Mastectomy and Breast Reconstruction Audit(2011) reported that in England, four in ten women diagnosed with breast cancer undergone mastectomy as their primary therapeutic procedure. Some women may also prefer mastectomy to the option of breast conserving surgery. Most prevalent cancer among women is breast cancer and mastectomy is opted for 81% of surgeries for breast cancer treatment. Mastectomy may develop feelings like deformation or impairment in patient's

body- image disorder and it reduce sexuality and sexual activity which may be turn to entail mental disorders. (Steven Halls, 2017)

Depending on each person's medical condition and type, cancer treatment is in several ways. Common treatments of breast cancer involve drugs, which can be given by mouth or directly into the bloodstream. Chemotherapy and radiation therapy, surgeries and biological therapies. (American Cancer Society, 2015)

NEED FOR THE STUDY

Surgery is considered as the primary treatment for breast cancer. Many patients are cured with surgery alone. The goal of breast cancer surgery includes complete resection of the primary tumor to reduce the risk of local recurrences and axillary lymph nodes to provide necessary prognostic information. Adjuvant treatment of breast cancer is designed to treat micro metastatic disease and it involves radiation therapy and systemic therapy. Surgical treatment of invasive breast cancer may consist of lumpectomy or total mastectomy. Breast cancer patients who had clinically negative nodes undergoes sentinel lymph node (SLN) dissection for staging the axilla. (Pavani, 2017)

Patients with lymphedema experience multiple psycho-social problems. Lymphedema decreases the quality of life of women. The impairments associated with lymphedema lead to functional limitations that can be targeted successfully by specific interventions. (Sheila, 2009)

The threatened women for secondary lymphedema are nearly about 1.3 billion in worldwide and over 120 million people are currently affected with secondary lymphedema. About 40 million individuals are disfigured by lymphedema and suffering from recurrent infections and other secondary conditions. (WHO, 2012)

Secondary lymphedema is a serious problem for many of the 2.6 million breast cancer survivors in the United States. It is estimated that 28 – 38% of breast cancer survivors develop lymphedema. The five-year incidence ranges from 43% to 94%. Secondary lymphedema is a common complication of breast cancer therapy that can result in substantial functional impairment and psychological morbidity. The risk of arm edema increases when axillary dissection is used. Non-pharmacologic treatment such as

massage and exercise therapy had shown to be effective therapies for lymphedema. (Armer, 2010)

Twenty five percent patients developed lymphedema after surgical intervention and 38% of them acquired after receiving axillary node dissection and radiation therapy. Approximately one in four women develops arm edema after treatment of breast cancer. The overall reported incidence of arm edema was 26%-56% with mastectomy and sentinel node biopsy after 2 years of surgery and axillary dissection. (Petrek and Lerner, 2001)

According to Cancer Facts& Figures report of breast cancer cases were diagnosed at localized stage. 61%of suppose the cancer has not spread to lymph nodes, nearby structures or other locations outside the breast, they have a 5-year survival rate of 99%. If the cancer has spread to tissues or lymph nodes under the arm at regional stage the survival rate is 85%. If the spread is to lymph nodes around the collarbone or to distant lymph nodes or organs at distant stage the survival rate falls to 25%.

The potential complication after axillary dissection for breast cancer surgery are secondary lymphedema, tendinitic type pain, post-operative edema, hand numbness or tingling, difficulty in grasping objects, weakness of the operated side, carpal tunnel syndrome, clicking and sticking of their fingers or thumb. After 18 months of breast cancer surgery, at least 30% of breast cancer survivors had lymphedema. Approximately 60% of women had transitory symptoms, whereby the secondary lymphedema dissipated with or without treatment Long term lymphedema were expressed by 40% patients who last for more than 3 months, with or without intermittent periods of relief. Women with Secondary lymphedema have poorer upper-body function when compared with women who had not developed arm swelling.(Sandra C. Hayes, 2008).

The most frequent postoperative complication after axillary dissection is seroma formation with an incidence of 3%. A reoperation procedure is necessary for cases with longstanding persistent seroma. Secondary Lymphedema in patients with breast cancer is caused by interruption of the axillary lymphatic channels by surgery or radiation therapy. Secondary Lymphedema may present immediately or years after axillary dissection with an incidence is of 20%. (Vivek Srivastava,2012).

Standard treatment for secondary Lymphedema includes multiple tools depending on the stage, severity, source and duration. An intensive phase of treatment involves manual lymph drainage (MLD), compression bandaging, decongesting exercises, patient education and meticulous skin care. The intensive phase is followed by a home care maintenance phase comprising a combination of self-MLD, self-bandaging and wearing of compression garments, decongesting exercises and meticulous skin care. (International Severity Lymphedema, 2013).

Evidence emerges that early treatment of pre-clinical lymphedema has the potential of preventing progression to more severe stages and avoiding the permanent tissue changes that result from long-standing lymph stasis. Early treatment of lymphedema decreases adverse clinical outcomes and costs. Insurance claims data was used on a population of 1,065 individuals with cancer-related lymphedema and shown that the treatment of lymphedema reduced annual rate of hospitalization from 45 to 32%, outpatient hospital visits from 95 to 90%, cellulitis diagnoses from 28 to 22%, physical therapy use from 50 to 41%, and annual health care costs from $62,190 to $50,856. (Brayton et.al 2014).

Lymphedema is an understudied consequence of surgery for breast cancer. It is estimated that as many as 60% of breast cancer survivors report symptoms of lymphedema. Few studies have examined the impact of lymphedema on the lives of women with breast cancer. Overall, women knew little to nothing about lymphedema before they developed it. After diagnosis, the primary source of information about lymphedema was a doctor or physical therapist. The majority of women received compressive garment therapy (75%), 46.9% received mechanical compressive therapy, 26% received bandaging, and 22% received physical therapy. More than half (55%) reported that clothing and appearance were affected by their condition and 48% reported that routine daily activities were impaired. Hot weather (58%) and regular arm use (40%) were reported to exacerbate the swelling. Most physicians reported that they did not routinely counsel women or provide written information on lymphedema prevention to their patients, and the extent to which women's daily living was affected by the condition was not always recognized. (Electra, 2000)

The incidence of arm lymphedema seemed to increase up to 2 years after mastectomy was highest when assessed by more than one diagnostic method and was about four times higher in women who had axillary lymph node dissection. Women undergoing treatment for breast cancer adopt strategies for the prevention and control of lymphedema which indicates their awareness of self-care techniques, knowledge about the morbidity and requirement for life long treatment. Health care provider can play a pivotal role as educators by informing breast cancer patients about the benefits of regular exercise, risk of secondary lymphedema, prevention strategies, early signs and symptoms which helps them to guide breast cancer patients. (Disipio T, 2013)

The investigator from her clinical experience realized that secondary lymphedema is an important problem. Through literature review revealed many intervention for the prevention of secondary lymphedema. Hence the investigator decided to intervene, through education on prevention of secondary lymphedema.

STATEMENT OF THE PROBLEM

Effectiveness of educational intervention on knowledge and self-care for prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer at KMCH, Coimbatore

OBJECTIVES OF THE STUDY

The objectives of the study were to

- assess the level of knowledge and self-care before and after educational intervention among patients who underwent axillary dissection for breast cancer.
- determine the effectiveness of educational intervention on level of knowledge and Self-care among patients who underwent axillary dissection for breast cancer.
- correlate the knowledge and self-care of patient with axillary dissection for breast cancer.
- associate the knowledge and self-care with selected demographic variable.

OPERATIONAL DEFINITIONS

- **Educational Intervention**

  Refers to computer assisted teaching and demonstration of massage therapy over arm, hand and shoulder and re demonstrated actively by the study participants.

- **Knowledge**

  Refers to factual understanding of patients regarding the nature of secondary lymphedema.

- **Self-care**

  Refers to verbal response to various aspect of preventive practice of secondary lymphedema.

- **Secondary lymphedema**

  Swelling of arms after axillary dissection for breast cancer.

HYPOTHESES

On the basis of objectives of study the following hypotheses have been formulated.

H_1: There is a significant difference in the pre-test, post-test knowledge and self-care scores of patient who underwent axillary dissection for breast cancer surgery.

H_2: There will be a significant relationship between knowledge and self-care scores of patient who underwent axillary dissection for breast cancer surgery

H_3: There will be a significant association in knowledge and self-care scores of patient who underwent axillary dissection for breast cancer surgery with selected demographic variables.

ASSUMPTIONS

Axillary dissection patients may have inadequate knowledge and self-care on prevention of secondary lymphedema.

CONCEPTUAL FRAMEWORK

The conceptual framework refers to interrelated concepts or abstract those are assembled together in same rational scheme by virtue of their relevance to a common theme (Polit and Hungler 1999)

It is developed with the aid of reviewing research findings, investigators experience and comprehension. The illustrative representation of ideas and concepts help the investigator to transfer the ideas to others easily. It gives a 'concrete' basis for 'abstract' ideas.

The conceptual framework for this study was developed by applying Ludwig Von Bertalanfft (1968) general system theory. According to the general system theory a system consist of a set of interaction components. There are two types of general system i.e., closed and open. A closed system does not exchange every, matter or information with its environment. It receives no input from the environment and gives no output from the environment. In an open system the energy, matter or information move into and out of the system.

All living system such as plants, animals, people, families and communities are open system. Open system consist of the input, throughput and output process. According to theorist view the information, matter and energy that the system receives, transforms the output in a process called as throughput and releases information, matter and energy as output in the environment output that returns to the system as input is called feedback which may be positive, negative or neutral.

In the present study the investigator considered the women with axillary dissection for breast cancer as open system which possesses input, throughput, output and feedback.

INPUT

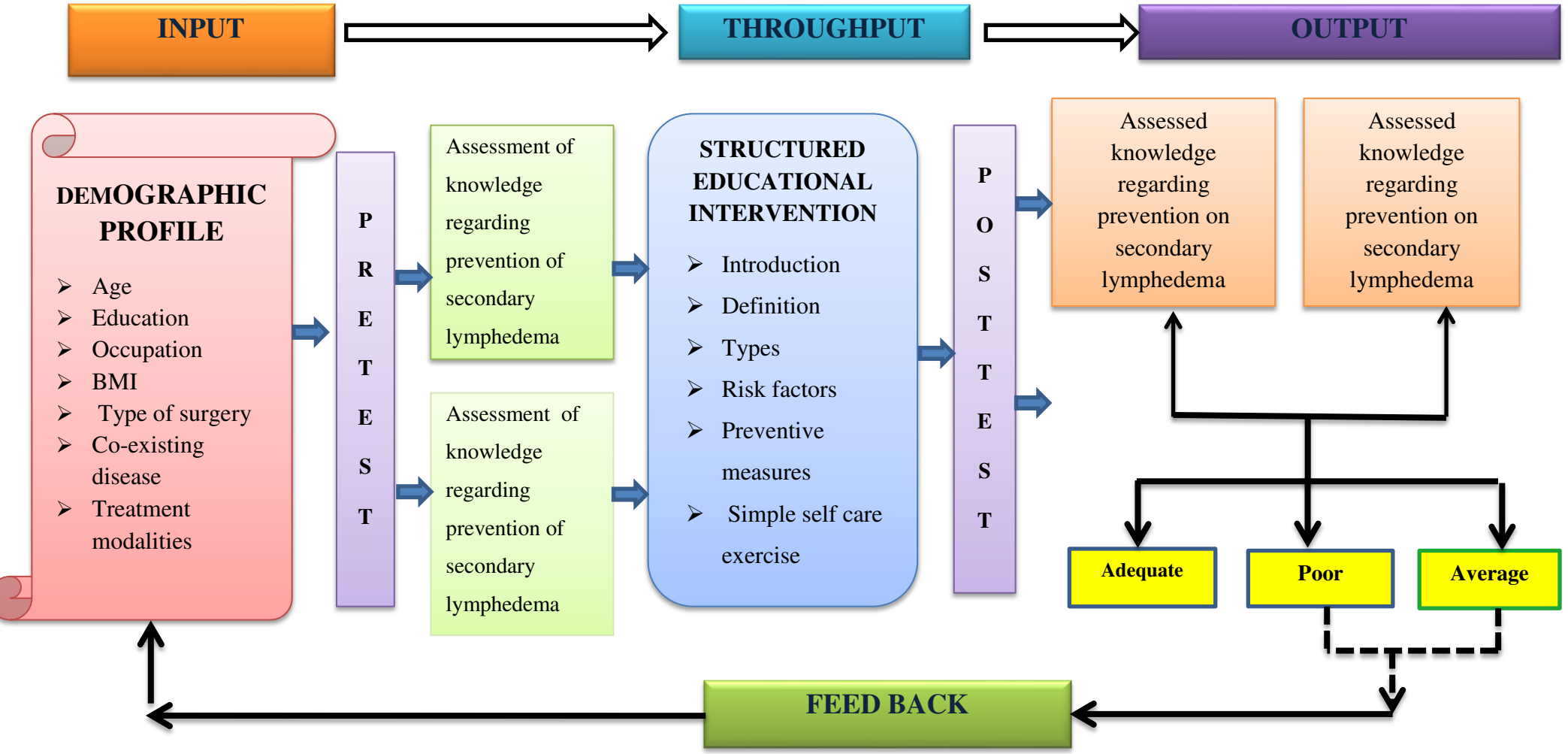
In this study the investigator assessed the demographic variable such as age, education, occupation, BMI, type of surgery, co-existing disease, treatment modalities of breast cancer, and assess the knowledge and self-care on prevention of secondary lymphedema.

THROUGHPUT

In throughput the investigator gave educational intervention regarding prevention of secondary lymphedema which comprised the introduction, definition, types, risk factors, preventive measures, simple self-care exercise and complications of secondary lymphedema.

OUTPUT

Considering the output the investigator assessed the knowledge and self-care after a week of educational intervention. By creating such awareness through education the women would be helped to prevent secondary lymphedema after axillary dissection.



Conceptual Framework Based on Modified General System Theory Ludwig Von Bertalanfy's (1968)

CHAPTER - II

REVIEW OF LITERATURE

A review of literature on the research topic helps the researcher to familiarize themselves with the knowledge base. It is an important step in research with a background for understanding current knowledge on topic and illuminates the significance of the new study.

Highly extensive review was made to strengthen the present study and to lay down the foundation, which helps to reveal the prevailing situation of the similar studies in different areas.

The related literature are reviewed for the present study to assess the effectiveness of educational intervention on knowledge and self-care for prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer surgery at KMCH, Coimbatore

Review of literature is presented under following headings:

Section 1: Literature related to risk factors of breast cancer

Section 2: Literature related to axillary dissection breast cancer surgery

Section 3: Literature related to complications after axillary dissection.

Section 4: Literature related to educational intervention on prevention of secondary lymphedema

Section 1: **Literature related to risk factors of breast cancer.**

Megan, et al., (2016) conducted to identify risk and protective factors for breast cancer incidence and survival. It focused on exogenous and endogenous hormones, lifestyle factors, including diet, physical activity, and aspirin use, intermediate markers of risk, and genetic factors. Risk of breast cancer for post-menopausal hormone users was 36% higher than never users and the association of short-term (4-year) weight change with pre- and postmenopausal breast cancer. Short-term gain was associated with increased breast cancer risk that was stronger for premenopausal women, suggesting that the protective association with current BMI before menopause may be driven by body size earlier in life. Women who engaged in physical activity for nine or more metabolic

equivalent hours per week had a lower risk of death from breast cancer. Women consuming both moderate (5–14 g/day) and high (more than 15 g/day) amounts of alcohol had an elevated risk of breast cancer. It helped to identify lifestyle changes that may reduce risk and improve survival after a diagnosis of breast cancer.

Gupta, et al, (2015) conducted literature review to evaluate the awareness of risk factors for breast cancer among Indian women and health professionals. Among 7066 women aged 15–70 years showed varied levels of awareness on risk factors such as family history (13–58%), reproductive history (1–88%) and obesity (11-51%). Literacy levels on risk factors did not improve over the 8-year period (2005–2013).On average, nurses reported higher, though still varied, awareness levels for risk factors such as family history (40.8–98%), reproductive history (21–90%) and obesity (34–6%). Awareness levels were not consistently higher for the stronger determinants of risk.

Hussein, et al., (2013) identified modifiable risk factors as the long-term use of oral contraceptives, low body mass index (BMI) and high animal fat diet consumption in association with increased risk of premenopausal breast cancer. Decreased physical activity and obesity increase risks of breast cancer in postmenopausal women. But data on premenopausal women showed that high BMI was associated with decreased risk of breast cancer. Non-modifiable risk factors LIKE family history and genetic mutations accounted for increased risk of cancer breast in premenopausal women. Cancer breast in young women was associated with adverse pathological factors like HER2 over expression, hormone receptor negativity and high grade tumors.

Yin Tsu, et al., (2012) performed a cross-sectional study among 400 Chinese women to examine the practices, knowledge, and attitudes toward breast cancer. Among study participants, 75% of them women never had a mammogram. The top three barriers reported were low priority, feeling okay and lack of awareness/knowledge toward breast cancer screening. The study results showed increased self-efficacy with monthly self-performance and had clinical breast exams in the past two years as significant. The demographic variables were not correlated with screening behaviors. The results provided a foundation to better understand beliefs and practices of Chinese women toward breast cancer screening and highlighted the critical need for general public, health

professionals, and the health care system to work collaboratively toward improving the quality of breast cancer care in this population.

Gillian, et al., (2008) investigated the risk factors of breast cancer among 4,560 women. Women where pregnant 30 years ago had 35% reduced risk of dying compared with women who had full-term pregnancy since 15 years, and the use of hormone replacement therapy for more than 4 years was also associated with a similar risk reduction. BMI was associated with 3% increase in mortality. Improved prognosis was seen with increasing current alcohol consumption, with 2% risk reduction of death per unit of alcohol consumed per week. The study identified that an increase in BMI is associated with a poorer prognosis and recommended that advice on weight loss should to all obese patients with breast cancer.

Section 2: Literature related to axillary dissection for breast cancer

Emerson, et al., (2014) conducted a cross-sectional study among 200 women with invasive breast cancer who underwent breast-conserving surgery (82.5%, n = 165) or mastectomy (17.5%, n = 35) with axillary lymph node dissection (ALND) from 2007 to 2011. Arm perimetry was used to assess lymphedema. Result shows that only 3.5% (n = 7) of the patients presented with lymphedema. Single-incision approaches to breast tumor and ALND and the presence of a postoperative seroma *(*P = *0.02)* were associated with lymphedema in univariate analysis. The most frequent observed side effect was paresthesia (53% of patients, n = 106). The complication was associated with increased age ($P < 0.0001$) and a larger dissected lymph node number ($P = 0.01$). Additionally, 24% (n = 48) of patients had noticeable limited arm abduction. Among the patients, 27.5% (n = 55) experienced sporadic arm pain corresponding to the surgically treated armpit. In multivariate analysis, the pain risk was higher in patients who underwent ALND corresponding to their dominant arm and concluded that conventional ALND in breast cancer patients can result in unwanted complications.

Pramod, et al., (2010) conducted a study about the incidence of lymphedema among 231 Indian women who underwent axillary dissection for breast cancer, 203(87.9%) patients underwent modified radical mastectomy. Overall incidence of lymphedema was 41.1%. 5-10% increase as mild lymphedema may be a bit severe as in

most patients. The incidence of moderate and severe lymphedema is only 7.4%. The incidence of clinically significant lymphedema (moderate to severe lymphedema & symptomatic mild lymphedema) was 16.8% and concluded that prevention by means of sentinel node biopsy in early cases, good surgical technique, arm care post-surgery, exercises and massage therapy may help reduce the incidence of lymphedema.

Section 3: Literature related to complications after axillary dissection

Jagsi, et al., (2016) contributed a claims-based analysis on complications after mastectomy and immediate breast reconstruction for breast cancer. Among 14,894 women during 1998 to 2007 who underwent immediate autologous reconstruction (n = 2637) and immediate implant-based reconstruction (n = 3007), wound complications were diagnosed within the first 2 postoperative years. 2.3% which included patients without reconstruction, 4.4% patients with implants, and 9.5% patients with autologous reconstruction ($P < 0.001$). Infections were diagnosed within the first 2 postoperative years among 12.7% patients without reconstruction, 20.5% with implants, and 20.7% with autologous reconstruction ($P < 0.001$). A total of 5219 (35%) women received radiation. Radiation was not associated with infection in any surgical group within the first 6 months but was associated with an increased risk of infection in months 7 to 24 in all 3 groups (each $P < 0.001$). In the period of7-24 months radiation was associated with higher odds of implant removal in patients with implant reconstruction ($P < 0.001$) and fat necrosis in those with autologous reconstruction ($P = 0.01$).It concluded that radiation therapy seems to modestly increase certain risks, including infection and implant removal.

Myungsoo, et al., (2015) conducted a study on breast cancer related lymphedema after Neo adjuvant chemotherapy among 313 women who underwent Neo adjuvant chemotherapy (NCT) followed by surgery with axillary node dissection. The study characterized132 patients who developed lymphedema: 88 (28%) of them were graded as 1; 42 (13%) were graded 2; and 2 (1%) of them were graded as 3. The incidence of lymphedema was 42%. Lymphedema first occurred within 6 months after surgery among 62% women; 1 year in77%; 2 years in 91%; and 3 years among individuals 96%. In a multivariate analysis, age (hazard ratio ($p < 0.01$) and the number of dissected axillary

lymph node ($p < 0.01$) were independent risk factors for lymphedema and concluded lymphedema after Neo adjuvant chemotherapy, surgery, and supra clavicular radiation therapy developed early after treatment, and with a high incidence rate.

Miller, et al., (2014) conducted a study of risk of lymphedema after mastectomy among 664 breast cancer patients52% (343) were with sentinel lymph node biopsy and no radiation therapy, 5% (34) were with sentinel lymph node biopsy and radiation therapy, 9% (58) were with axillary lymph node dissection and no radiation therapy, and 34% (229) were with axillary lymph node dissection and radiation therapy. The two-year cumulative lymphedema incidence was 10% (95% CI: 2.6–34.4%) for sentinel lymph node biopsy and radiation therapy compared with 19.3% (95% CI: 10.8– 33.1%) for axillary lymph node dissection and no radiation therapy, and 30.1% (95% CI: 23.7–37.8%) for axillary lymph node dissection and radiation therapy and concluded that avoiding completion axillary lymph node dissection and instead receiving sentinel lymph node biopsy with radiation therapy may decrease lymphedema risk in patients requiring mastectomy.

Saadet, et al., (2013) assessed the risk factors of breast cancer-related lymphedema among 455 women who had been operated for primary breast cancer. The study characterized lymphedema being found in 124 (27%) patients. Most of the patients with a history of postoperative wound infection(52%) and lymphangitis (57%) had lymphedema ($p = 0.003$ and $p = 0.002$, respectively). Addition of radiation therapy increased lymphedema risk 1.83 times ($p = 0.007$). The mean duration of the axillary drainage and number of the removed lymph nodes were 7.8 and 19 days respectively. Most of the patients (92%) with lymphedema had a high body mass index (BMI>25 kg/m^2), and obesity was another important factor for lymphedema ($p< 0.001$). The study revealed risk factors for breast cancer-related lymphedema as obesity (> 25 kg/m^2), axillary lymph node dissection, postoperative radiotherapy, wound infection, history of lymphangitis, and duration of axillary drainage.

Haghighat, et al.,(2013) conducted a study on risk factors of lymphedema among 410 breast cancer patients, 123 cases (30%) developed lymphedema. Variables such as low educational level, body mass index (BMI), higher stage of disease, number of involved lymph nodes, comorbid diseases, trauma, infection, and the time after surgery

showed significant correlation with the development of lymphedema. In logistic regression analysis, increase of 1 kg/m^2 in BMI (OR = 1.09; 95% CI 1.05–1.15), each number increase in lymph node involvement (OR = 1.15; 95% CI 1.08–1.21) and the increase of every 1month after surgery (OR = 1.01; 95% CI 1.01–1.02) significantly increased the risk of lymphedema and concluded that a fitted BMI, self-care, and education about preventive activities may influence in decreasing the incidence of lymphedema and improving the patients' quality of life.

Saedi,et al., (2013) conducted a study of lymphedema risk factors among 312 patients with invasive breast cancer after the Initial treatment. Among 312 total patients 101 patients (32.4%, 95% CI: 27.2-37.6) developed lymphedema. Obesity according to body mass index significantly affected the development of lymphedema (p=0.03). The average number of metastatic nodes was 4.56±4.05 in patients who had and 2.48 ± 3.19 in patients who did not have lymphedema (p<0.01). The average percentage of metastatic to excised nodes was %54.59 ± 37.48 in patients who had and %34.67 ± 34.84 in patients who did not have lymphedema (p<0.01).The study concluded body mass index, the number of metastatic nodes and the percentage of metastatic to excised nodes were correlated with the development of lymphedema.

Ashraf, et al., (2009) done retrospective review on mastectomy wound infection between January 1990 and July 2008. The overall incidence of wound infection was 18.2% (231/1267). The rate of wound infection was (32%) when reoperation was done after previous modified radical mastectomy, 18.9% and 16.8% when the previous operations were lumpectomy or segmenectomy with axillary dissection and simple mastectomy without axillary dissection and (10.8%) when reoperation was performed after previous biopsy. Reoperation involving axillary dissection was associated with significantly higher rates of wound infection ($p < 0.01$). Antibiotic prophylaxis continued into the postoperative period was associated with significantly decreased rate of wound infection ($p < 0.01$).The study referred higher the risk of wound infection are seen among patients who had undergone axillary dissection or modified radical mastectomy

Lucci, et al.,(2007) analyzed a prospective, randomized, multicenter trial which compared complications associated with sentinel lymph node dissection (SLND) plus ALND, versus SLND alone from May 1999 to December 2004 among 891 patients who

were grouped to SLND and ALND (n =445) or SLND alone (n = 446). Adverse surgical effects were reported in 70% (278 of 399) of patients after sentinel lymph node dissection, axillary lymph node dissection and 25% of patients (103 of 411) after sentinel lymph node dissection alone (P ≤ .001). Patients in this group had more wound infections (P ≤.0016), seromas (P ≤ .0001), and paresthesias (P ≤ .0001) than those in the sentinel lymph node dissection group alone. At one year, lymphedema was reported by 13% (37 of 288) of patients after sentinel lymph node dissection, axillary lymph node dissection and 2% (six of 268) after sentinel lymph node dissection alone (P ≤ .0001). The difference between the two groups lymphedema was assessed by arm measurements at one month, six month and 1 year, although close to the cutoff for significance at 1 year, was not significant. The study concluded that the use of SLND + ALND resulted in more wound infections, axillary seromas, and paresthesias than SLND alone. Lymphedema was more common after SLND + ALND but the use of SLND alone resulted in fewer complications.

Section 4: Literature related to educational intervention on prevention of secondary lymphedema.

Jie Deng (2016) study aimed to report head and neck cancer patients who received lymphedema education, self-care practices, and suggestions related to self-care of head and neck lymphedema Survey consisted twenty head and neck cancer patients who completed lymphedema therapy participated in semi-structured face-to-face interviews. Interviews were audio-recorded and transcribed. Content analysis was used to analyze the interview data. Participants reported that they were educated about self-care activities for lymphedema management by their lymphedema therapists. Although most participants (*n* = 16, 80 %) expressed positive comments about lymphedema self-care education, some participants (*n* = 7, 35 %) described issues related to lymphedema self-care education. Majority of the participants (*n* = 17, 85 %) reported that they were conducting some lymphedema self-care activities; more than half of the participants (*n* = 11, 55 %) delineated barriers for diminished lymphedema self-care activities over time. Participants further indicated suggestions for improving and ensuring consistency of lymphedema self-care. It emphasis on existing opportunity to improve lymphedema

self-care in head and neck cancer patients. Healthcare professionals should focus on delivering high quality and targeted information about self-care for management of head and neck lymphedema.

Ru Lu, et al., (2015) conducted a study on role of physiotherapy and patient education in lymphedema control following breast cancer surgery. Among1, 217 patients; 188 patients (15.4%) developed lymphedema, including 77 (18.6%) in Group A: who received neither education nor physiotherapy post-surgery, 101 (15.0%) in Group B: who received an educational program on BCRL between Days 0 and 7 post surgery, and 10 (7.7%) in Group C : who received an educational program on BCRL between Days 0 and 7 post surgery, followed by a physiotherapy program. (P=0.010). The independent risk factors for BCRL included positive axillary lymph node invasion, a higher (>20) number of dissected axillary lymph nodes, and having undergone radiation therapy, whereas receiving an educational program followed by physiotherapy was a protective factor against breast cancer related lymphedema (BCRL) (hazard ratio =0.35, 95% confidence interval =0.18–0.67, P=0.002) . The study concluded patient education which began within the first week post-surgery and followed by physiotherapy that was effective in reducing the risk of BCRL in women with breast cancer.

Sisman, et al., (2012) conducted a study on Nurse-assisted education and exercise program that decrease the prevalence and morbidity of lymphedema following breast cancer surgery. A total of fifty-five patients who had undergone mastectomy and axillary lymph node dissection between June 2009 and January 2010 were included in this study. The patients were informed by a trainer nurse about the precautions they should take to prevent the development of lymphedema. The patients were also trained for the appropriate exercises and were given written educational material prepared by the investigators. Among the participants, 96.4% underwent modified radical mastectomy and 3.6% breast-conserving surgery. The mean postoperative follow-up period was 9.87 ± 17.55 months. The degree of lymphedema was found lower, even within 6 months, in the patients who exercised as compared to the patients who did not exercise ($p<0.05$).The study concluded that the risk of development and progression of mastectomy-related lymphedema was reduced with nurse – assisted education and exercise provided at an early stage.

Zimmermann, et al.,(2012) conducted a study on efficacy of manual lymphatic drainage in preventing secondary lymphedema after breast cancer surgery. The study consisted of 67 women, from the second post-operative day. Thirty three women were chosen randomly and given manual lymphatic drainage. The control group consisted of 34 women who did not receive manual lymphatic drainage. Measurements of the volumes of both the arms were taken before surgery and on days 2, 7, 14, and at 3 and 6 months after surgery. At 6 months after breast cancer surgery, among the women who did not undergo manual lymphatic drainage, a significant increase in the arm volume on the operated side was observed ($p=0.0033$) when compared with the arm volume before surgery and concluded that manual lymphatic drainage administered early after operation for breast cancer should be considered for the prevention of lymphedema.

Elsayed Naglaa, et al., (2012) conducted a quasi-experimental design among 50 patients who underwent mastectomy. The objective of this study was to assess and evaluate the effect of pre-discharge educational guidelines on women's knowledge and self-care practices regarding arm lymphedema prevention after mastectomy. All the participants had inadequate knowledge about arm lymphedema and self-care practice regarding prevention of arm lymphedema before pre-discharge educational guidelines intervention. After guidelines intervention the knowledge about arm lymphedema and self-care practice regarding prevention of arm lymphedema was improved. The majority of the participants had adequate level with a significant difference between pre- and post-guidelines intervention. Also, the majority of the participants had adequate self-care practices post- guidelines intervention and during the follow up period. Also arm morbidity minimized during the follow up period. It was concluded that pre-discharge educational guidelines improved women's knowledge and self- care practices, regarding arm lymphedema prevention after mastectomy and also arm morbidity minimized during the follow up period.

Shereen, et al., (2011) described a one-group pretest-posttest pre-experimental research design among fifty-four female patients at the oncology clinic of Port-Said General Hospital in Port-Said city, Egypt. The objective was to implement an instructional scheme for mastectomized women regarding post mastectomy exercises in breast cancer study identified significant improvement in patients' knowledge on the

importance of arm exercises after mastectomy following implementation of the instructional scheme from 53.7% to 100%. Noncompliance with exercises also significantly declined following the implementation of the instructional scheme

Torres, et al (2010) evaluated various techniques performed by a physiotherapist. It consisted of manual lymph drainage of the arm, breast, and trunk on the surgical side; massage of the surgical scar; stretching of the shoulder, back, and chest muscles; shoulder rotation movements; and progressive active and assisted exercises of the shoulder. These were started simultaneously with functional activities and resistance-free neuromuscular facilitation exercises. This study provided educational instruction with printed handouts to both groups with information about the lymphatic system; descriptions of normal load versus overload of the lymph system; and causes, precipitating factors, and interventions to prevent the development of lymphedema. Measurement of arm circumference was taken at 4 weeks, 3 and 6 months, and 1 year after surgery. Study found that there was a significantly higher incidence of lymphedema in the control group (14 [25%] of 57 patients) compared with the intervention group (four [7%] of 59 patients; P _ .01). At the 1-year follow-up, arm volume of the surgically affected side was 5.1% greater than that of the non-affected side in the control group and 1.6% greater in the intervention group, a statistically significant difference (P _ .0065).

CHAPTER - III
METHODOLOGY

This chapter deals with research methodology widely adopted by the researcher to assess the effectiveness of educational intervention on knowledge and self-care for prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer at KMCH, Coimbatore. This research framework include research design, setting of the study, population of the study, criteria for selection of sample, sample size, sampling technique, development and description of tool for data collection, pilot study, Procedures for data collection and plan for data analysis.

RESEARCH DESIGN

The research design adopted for this study was Quasi Experimental one group pretest posttest design.

The Schematic representation of the design is as follows:

E O1 X O2

Keys:

- E - Experimental group
- O1 - Pretest assessment on knowledge and self-care regarding prevention of secondary lymphedema after axillary dissection breast cancer.
- X - Computer assisted teaching and demonstration on postoperative management for prevention of secondary lymphedema after axillary dissection breast cancer.
- O2 - Posttest assessment of knowledge and self-care regarding prevention of secondary lymphedema after axillary dissection for breast cancer.

VARIABLES OF THE STUDY

Independent variable : Computer assisted teaching, demonstration and re-demonstration of arm massage to prevent secondary lymphedema after axillary dissection.

Dependent variable : Knowledge and self-care regarding prevention of secondary lymphedema among patients who underwent axillary dissection.

SETTING OF THE STUDY

The study was conducted in Kovai Medical Center and Hospital (KMCH), Coimbatore. It is an NABH accredited super specialty hospital catering to a population of 800 with excellent health care delivery system. The hospital oncology ward and oncology outpatient department. Nearly ten breast cancer surgeries are performed every week.

POPULATION OF THE STUDY

The population comprised all the female patients who underwent axillary dissection for breast cancer at KMCH, oncology unit, Coimbatore.

SAMPLE SIZE

The sample size of the study was 30.

SAMPLING TECHNIQUE

Non probability purposive sampling technique was adopted to select the study subjects.

CRITERIA FOR SAMPLE SELECTION

INCLUSION CRITERIA

- Female patient who underwent axillary dissection for breast cancer.
- Patients who received adjuvant radiation therapy and or chemotherapy.
- Women aged 18 and above.
- Those who are able to read and write Tamil.

EXCLUSION CRITERIA

- Arm dysfunction or arm edema prior to surgery.

DESCRITION OF THE INTERVENTION

The intervention for the present study is postoperative management on prevention of secondary lymphedema after axillary dissection breast cancer. Using the computer assisted teaching which was developed by the investigator which lasts for 25 minutes. The computer assisted teaching consisted of anatomy and physiology of lymphatic

system, secondary lymphedema definition, its types, risk factors, preventive measures, simple self-care exercise, complications, Dos and Don'ts and follow-up care. The subjects gathered were in a separate room and educated through PowerPoint presentation using a wall mounted television. The educational material was prepared by the investigator after referring various journals and books. The content was validated after the consultation of subject experts the ethical committee clearance. The recommendations were considered.

DEVELOPMENT AND DESCRIPTION OF THE TOOL

Data collection was done through structured self-administered knowledge, self-care and self-care skill questionnaire. It has two sections.

Section A: Demographic variables of patients underwent axillary dissection for breast cancer.

Section B: Knowledge questionnaire on prevention of secondary lymphedema

Section C: Self-care questionnaire on prevention of secondary lymphedema

Section D: Performance of manual lymphatic drainage to evaluate the subjects self-care on prevention of secondary lymphedema.

Section A: Demographic variables

The demographic variables include age in years, education, occupation, BMI, type of surgery and co-existing disease.

Section B: Knowledge questionnaire on prevention of secondary lymphedema:

It consisted of 12 multiple choice questions with four options to assess the knowledge of subjects regarding prevention of secondary lymphedema after axillary dissection for breast cancer. Each correct answer carried "1" mark and "0" score for wrong answer. The total score earned by study subjects reflect their knowledge for prevention of secondary lymphedema after axillary dissection. The score ranged from 12 as maximum to 0 as minimum score.

Section C: Self-care questionnaire on prevention of secondary lymphedema:

It consisted of 13 multiple choice questions with four options to assess the self-care of subjects regarding prevention of secondary lymphedema after axillary dissection for breast cancer. Each correct answer carried "1" mark and "0" score for wrong answer. The total score earned by study subjects reflect their self-care for prevention of secondary lymphedema after axillary dissection. The score ranged from 13 as maximum to 0 as minimum score.

Section D: Performance of manual lymphatic drainage to evaluate the subjects self-care on prevention of secondary lymphedema.

Performance of manual lymphatic drainage is to evaluate the self-care regarding the prevention of secondary lymphedema. The total score is 10. Higher the score indicate the desirable self-care on prevention of secondary lymphedema.

TESTING THE TOOL

VALIDITY

The validity of the tool was obtained from the experts in the field of Nursing and Medicine. All the suggestions and recommendations were considered and corrections were made and the tool was found to be valid.

RELIABILITY

The reliability of the tool was ascertained by using Sherman's Brown split half method and reliability co-efficient of the tool for knowledge was0.76 and self-care was 0.91 and observational checklist was 0.81.. It was concluded that the tool was reliable for using in the present study.

PILOT STUDY

The pilot study was conducted for a period of one week. The investigator obtained formal permission from the respective authorities to conduct the pilot study. Six subjects were selected based on the inclusion and exclusion criteria, after assessing pretest knowledge and self-care the samples were educated with the help of PowerPoint

presentation for about 25 minutes. Posttest knowledge and self-care were assessed after one week upon follow-up visits. The result of pilot study revealed that the study was feasible.

PROCEDURE FOR DATA COLLECTION

The study was conducted for 6 weeks in Oncology ward of Kovai Medical Center and Hospital. The respondents were selected according to the inclusion criteria. The purpose of the study was explained to the women who underwent axillary dissection for breast cancer. The respondents were assured of confidentiality that the provided data would be used only for the intended purpose. After establishing a good rapport with the study participants, required demographic data were collected. Pretest knowledge, self-care and performance of MLD (manual lymphatic drainage were assessed through the self-questionnaire. The prepared PowerPoint presentation was delivered for about 25 minutes. Arm massage was demonstrated by the investigator and patients were asked to re-demonstrate the procedure. Posttest knowledge, self-care and performance of MLD were assessed on their subsequent visits.

DATA ANALYSIS

The obtained data was analyzed using both descriptive and inferential statistics. Descriptive statistics was used to describe the demographic variables and to assess the knowledge, self-care and performance of MLD before and after educational intervention. In inferential statistics paired “t” test was used to compare the knowledge, self-care and performance of MLD based on educational intervention. Karl Pearson correlation Co-efficient was used to find out the relation between knowledge and self-care on prevention of secondary lymphedema. Chi square test was used to associate knowledge and self-care with selected demographic variables.

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collected from the subjects to assess the effect educational intervention on knowledge and self-care for prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer. The findings were as follows:

Section A - Distribution of demographic variables

Section B - Distribution of subjects according to knowledge and self-care scores.

Section C - Comparison of pretest and posttest knowledge and self-care scores.

Section D - Correlate the knowledge and self-care scores of samples

Section E - Association of knowledge and self-care score with selected demographic variables.

SECTION - A

DISTRIBUTION OF DEMOGRAPHIC VARIABLES

Table-1: Distribution of demographic variables of subjects. (N=30)

S.NO.	Demographic variable	Frequency(f)	Percentage(%)
1	**Age in years**		
	a) 41-50 years	11	36.7
	b) 51-60 years	12	40
	c) 61-70 years	5	16.6
	d) >71 years	2	6.7
2	**Education**		
	a) Illiterate	0	36.7
	b) Primary	23	40.0
	c) Secondary	7	16.7
	d) High Secondary	0	6.7
	e) Graduate	0	0.0
3	**Occupation**		
	a) Agriculture	11	36.7
	b) Manual laborer	2	6.7
	c) Professional	0	0
	d) Business	0	0
	e) Unemployed	17	56.7
4	**Body Mass Index**		
	a) Below 18.5	2	6.7
	b) 18.5-24.9	22	73.3
	c) 25-29	6	20
	d) Above 30	0	0
5	**Type of surgery**		
	a) Unilateral mastectomy	14	4.7
	b) Bilateral mastectomy	2	6.6
	c) Radical mastectomy	0	0
	d) Lumpectomy with axillary dissection	8	26.7
	e) Quadrantectomy /wide local excision with axillary dissection	6	23.3
6	**Co-morbidity disease**		
	a) Diabetes mellitus	7	23.3
	b) Hypertension	2	6.7
	c) Hyperthyroidism	1	3.3
	d) Hypothyroidism	0	0
	e) Diabetes mellitus with Hypertension	3	10.0

Table-1describes the distribution of demographic variables of the subjects. Out of 30 subjects 40% of them belonged to the age group of 51-60 years and 36.7% were found of 41-50 years. Regarding education 40% were having primary education and 36.7% were illiterate. In case of occupation most of the women were unemployed. Based on body mass index 73.3% samples belonged to 18.5-24.9 categories and 26.7% women underwent lumpectomy with axillary dissection.

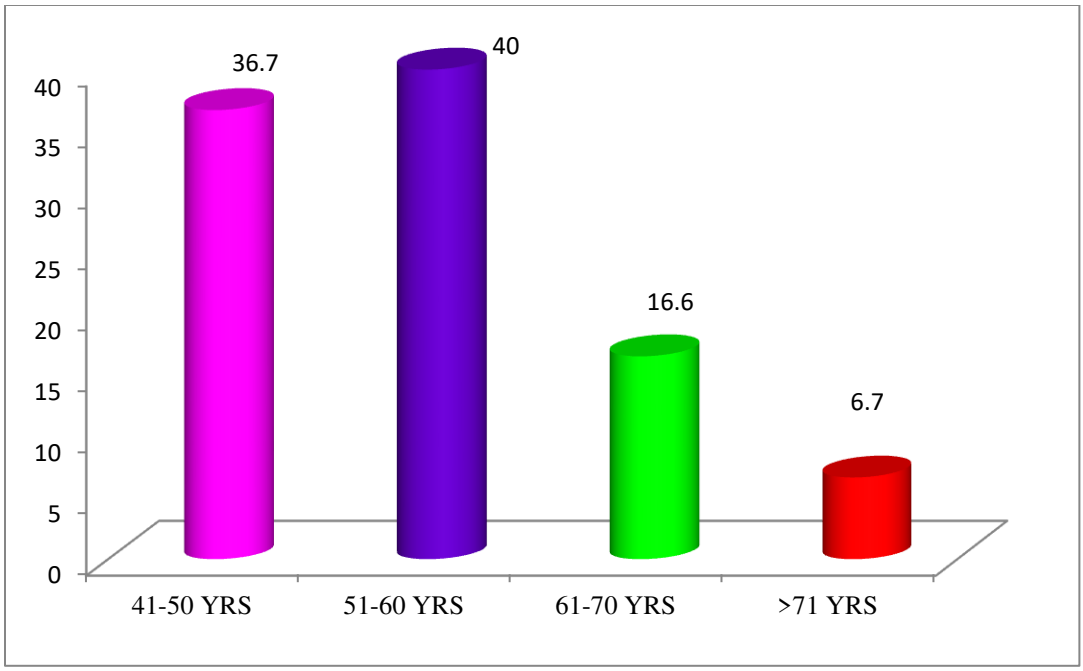


Figure: 2. Distribution of subjects based on Age in years

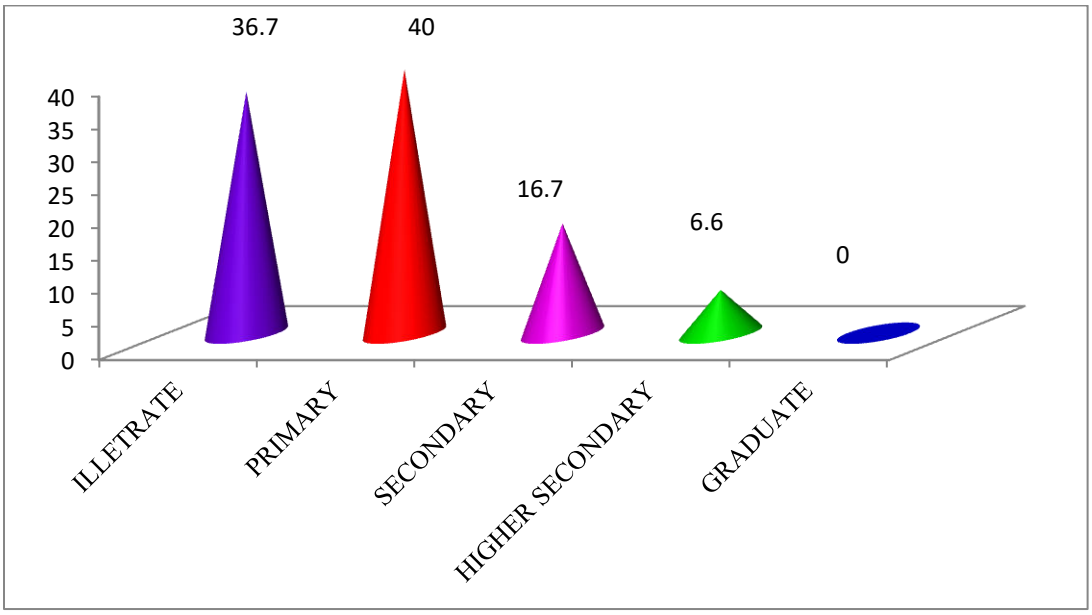


Figure: 3. Distribution of subjects based on Education

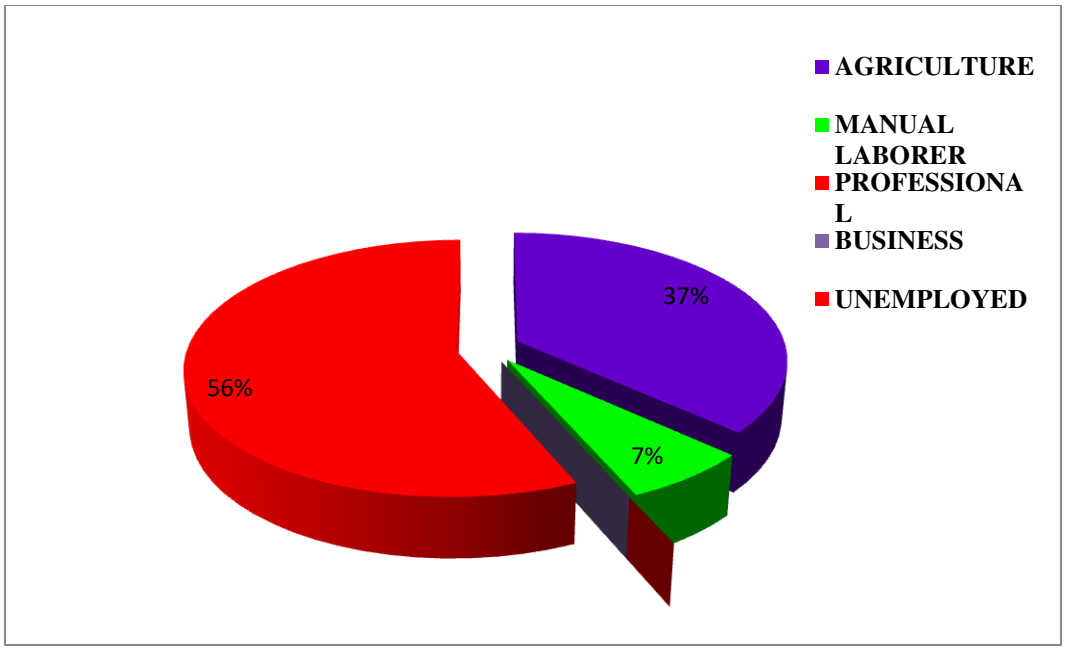


Figure: 4. Distribution of subjects based on Occupation

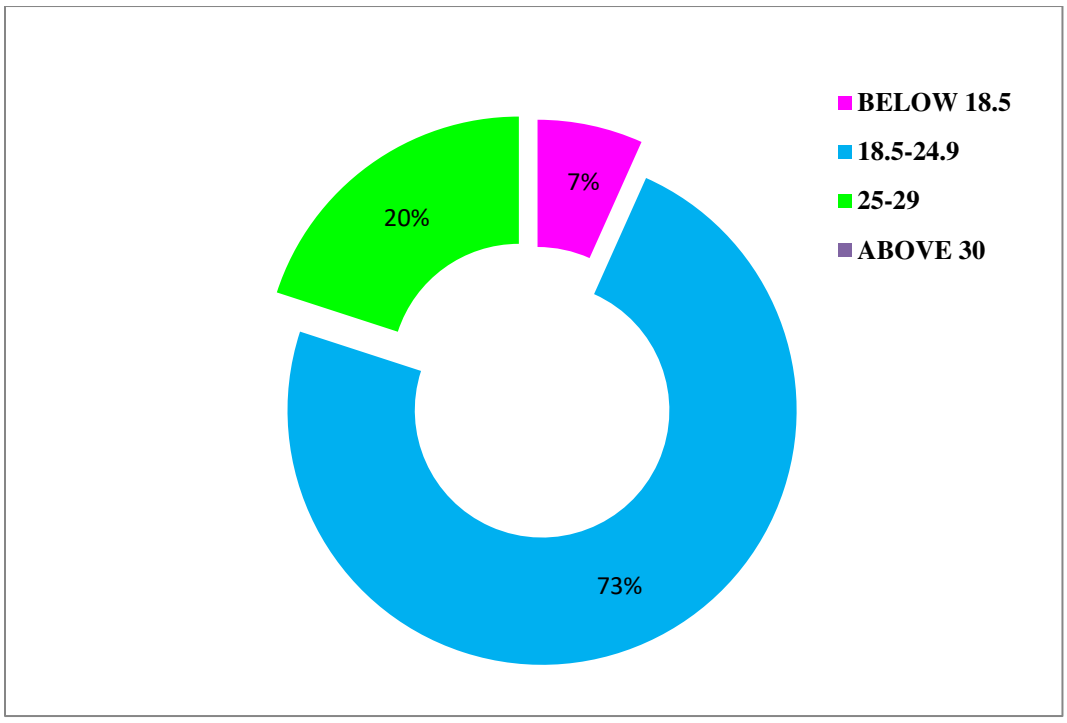


Figure: 5. Distribution of subjects based on Body Mass Index

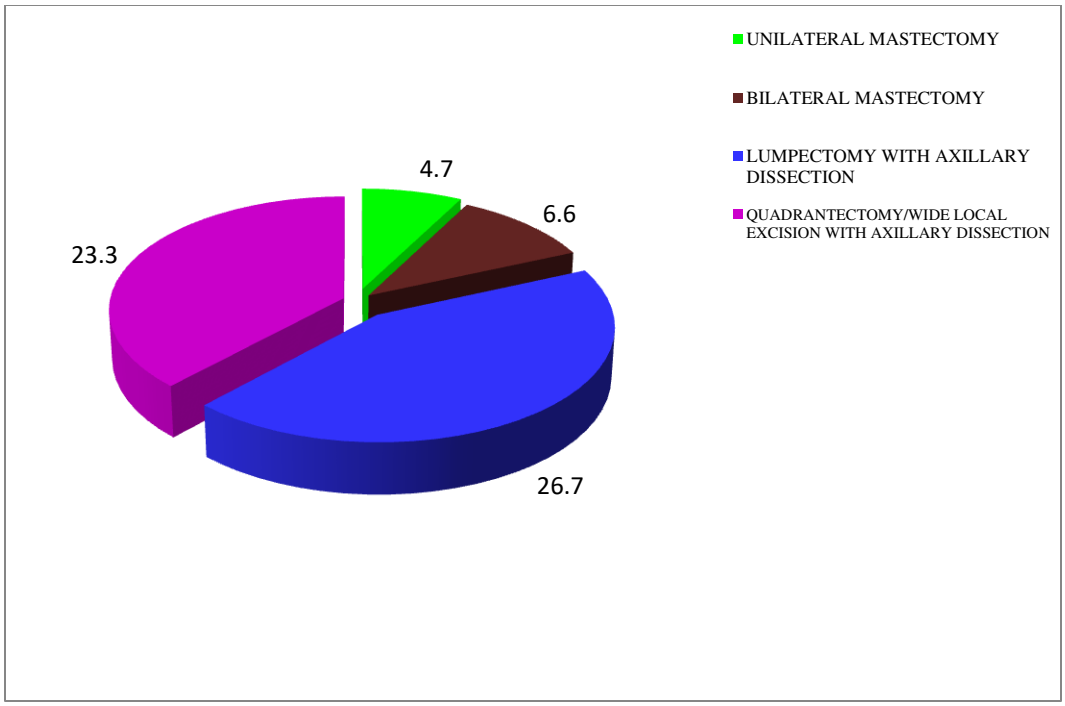


Figure: 6. Distribution of subjects based on Type of surgery

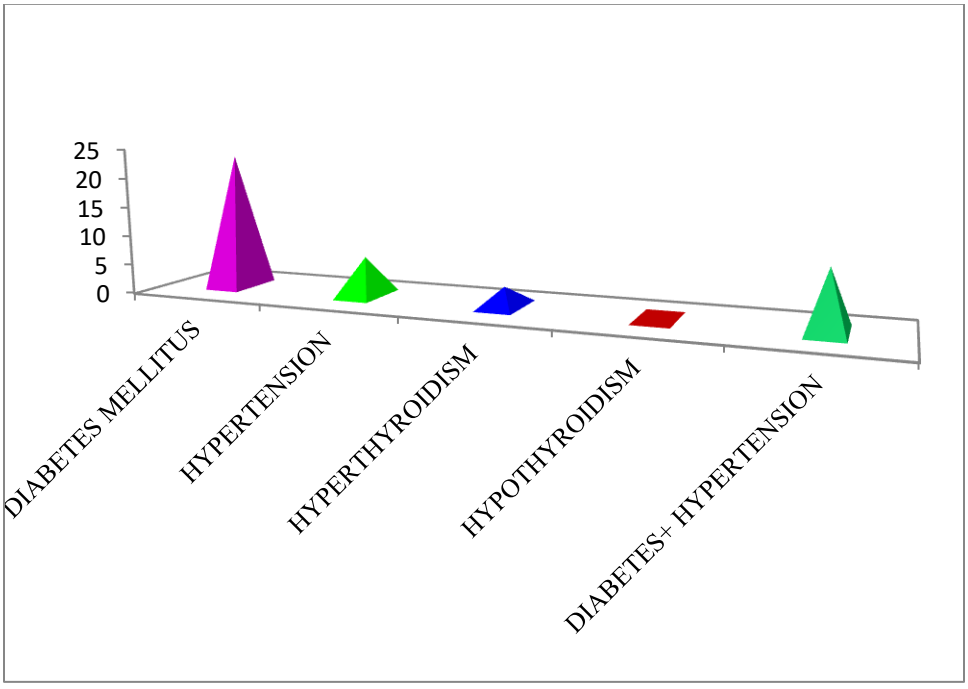


Figure: 7. Distribution of subjects based on Co-morbidity

Table-2: Distribution of knowledge and self-care. **(N=30)**

SL.NO	VARIABLES	PRETEST		POSTTEST	
		MEAN	SD	MEAN	SD
1	Knowledge	3.97	1.86	10.03	1.49
2	Self-care	5.37	1.42	9.67	1.80
3	Performance of MLD	3.33	1.51	7.87	1.57

Table 2 describes the mean and standard deviation of the pre and posttest knowledge and self-care and performance of MLD. The mean pretest and posttest knowledge score was 3.97 and 10.03.The mean pretest and posttest self-care score was 5.37 and 9.67.The mean pretest and posttest self-care performance of MLD was 3.33 and 7.87.

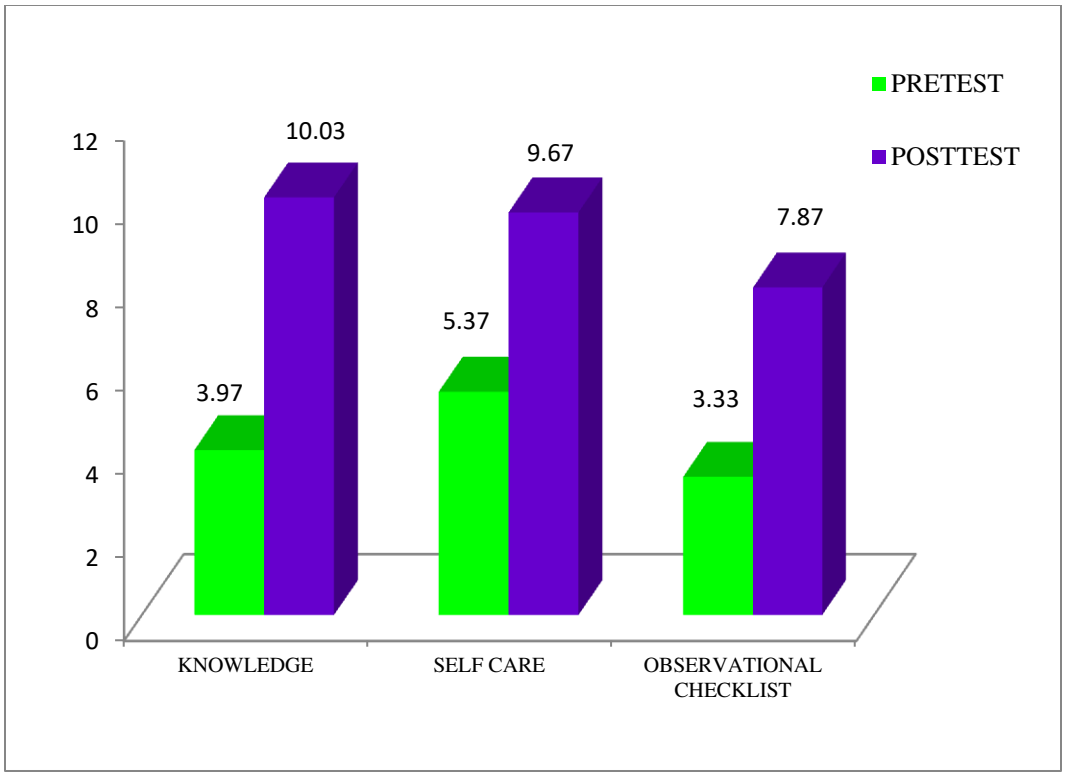


Figure 8: Distribution of knowledge, self-care and performance of MLD on prevention of secondary lymphedema

SECTION – B

Distribution of subjects according to knowledge scores.

Table-3: Distribution of subjects according to knowledge scores.

SL. NO	Category	Pretest		Posttest	
		F	Percentage (%)	F	Percentage (%)
1	Adequate	0	0	22	73.3
2	Average	11	36.7	8	26.7
3	Poor	19	63.3	0	0

Note: The mean Pretest score is 3.97 and Posttest score is 10.03.

Table-3: Represents the pretest and posttest knowledge scores of the subjects. Among 30 samples none of them had adequate knowledge. (11)36.7% of them had average knowledge scores and (19)63.3% of them had poor knowledge scores. In Posttest (22)73.3% of them had adequate knowledge; (8)26.7% of them had average knowledge and none of them were having poor knowledge score. The distribution of pretest and posttest knowledge scores is depicted in fig.no 9.

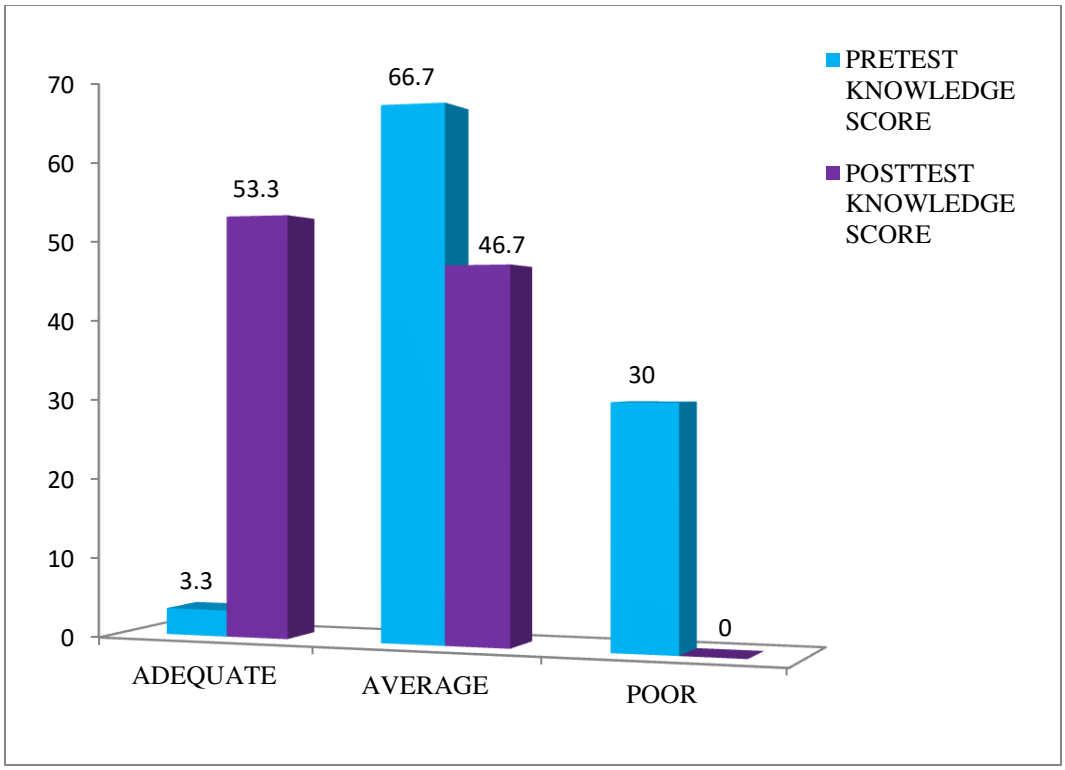


Figure-9.The distribution of pretest and posttest according to knowledge scores

Distribution of subjects according to self-care scores.

Table-4: Distribution of subjects according to self-care scores.

SL.NO	Category	Pretest		Posttest	
		F	Percentage (%)	F	Percentage (%)
1	Adequate	1	3.3	16	53.3
2	Average	20	66.7	14	46.7
3	Poor	9	30	0	0

Note: The mean pretest score is 5.37 and posttest score is 10.03.

Table-4: Represents the pretest and posttest self-care score of the subjects. Among 30 samples (20)66.7% had average self-care score; (9)30% of them had poor self-care scores and (1)3.3% of them had adequate self-care score. In Posttest (16)53.3% of them had adequate self-care score; (14)46.7% of them in average self-care scores. The distribution of pretest and posttest self-care scores is depicted in fig.no 10.

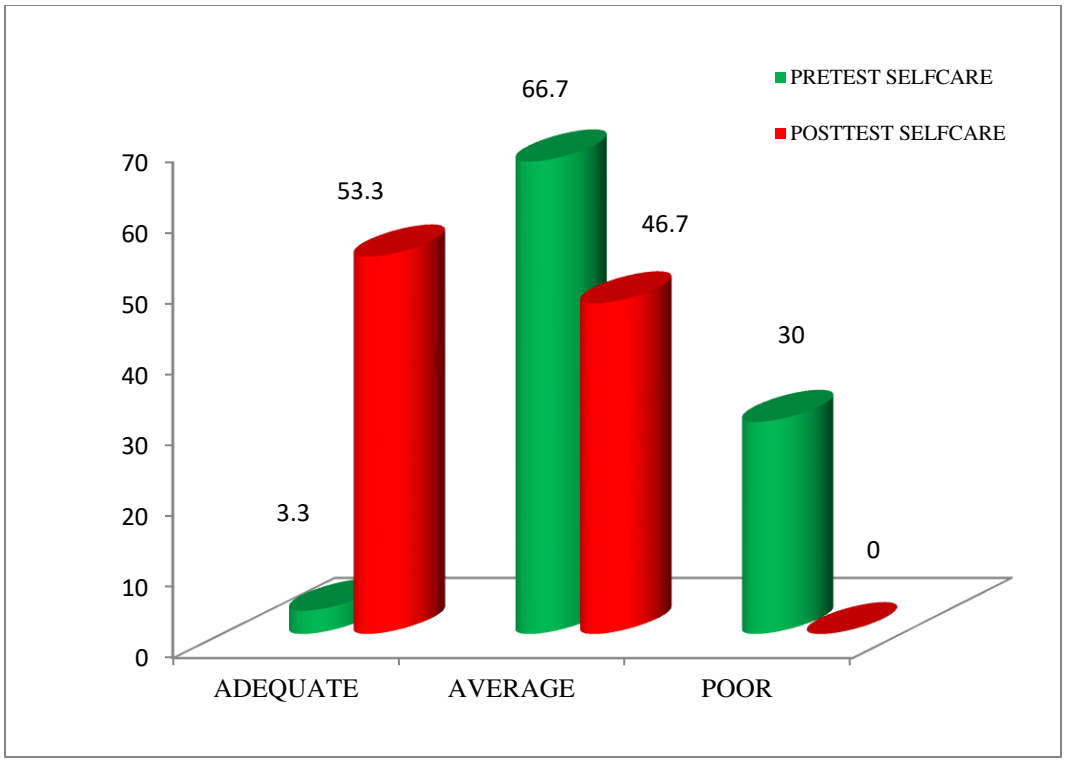


Figure-10.The distribution of pretest and posttest according to self-care scores

Distribution of subjects according to the performance of MLD.

Table-5: Distribution of subjects according to the performance of MLD.

SL. NO	Category	Pretest		Posttest	
		F	Percentage (%)	F	Percentage (%)
1	Adequate	0	0	23	76.7
2	Average	11	36.7	7	23.3
3	Poor	19	63.3	0	0

Note: The mean pretest score is 3.33 and posttest score is 7.87.

Table-5: Represents the pretest and posttest MLD performance of the subjects. In pretest among 30 samples, (11)36.7% had average performance score regarding prevention of secondary lymphedema ;(19)63.3% of them had poor performance scores. In Posttest (23)76.7% of them had adequate performance score; (7)23.3% of them in average performance scores. The distribution of pretest and posttest observational checklist is depicted in fig.no 10.

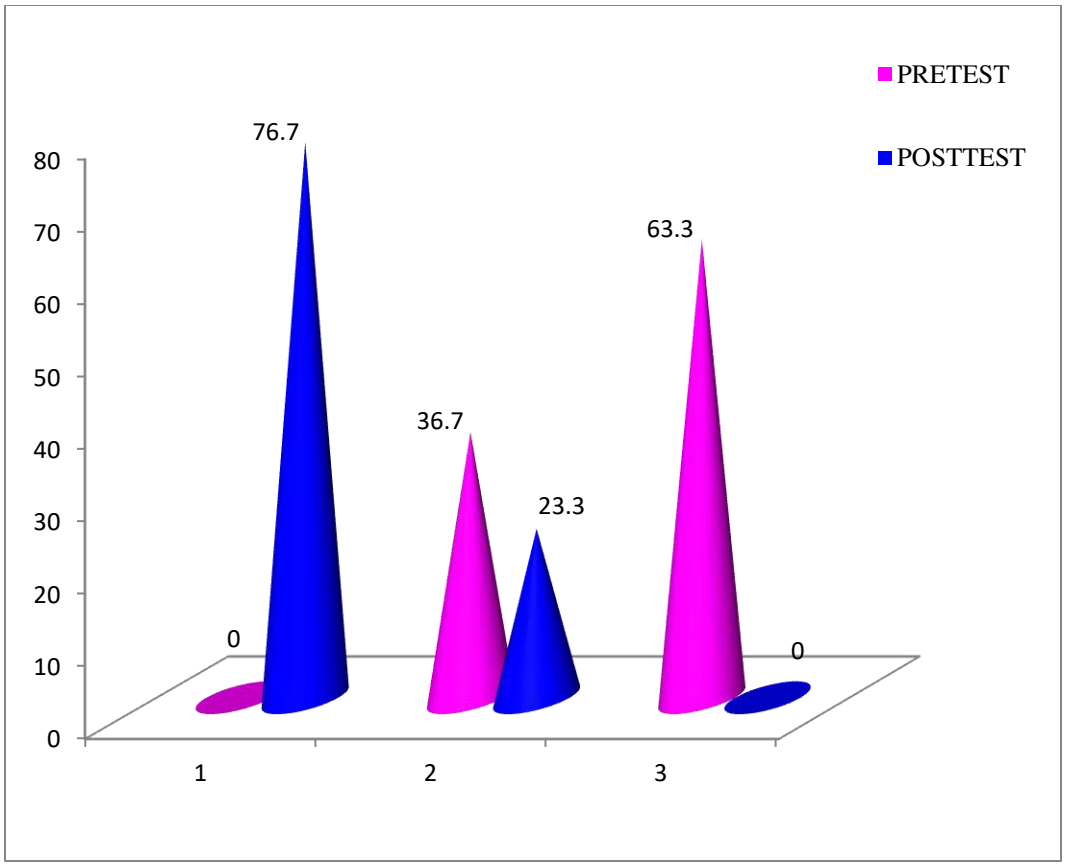


Figure 11:Distribution of pretest and posttest according to the performance of MLD.

SECTION - C

Comparison of Pretest and Posttest knowledge scores of subjects.

Table-6: Comparison of Pretest and Posttest knowledge scores of subjects. (N=30)

SL.NO	Knowledge on prevention of secondary lymphedema	Mean	S.D	Paired 't' value
1	Pre-test	3.97	1.86	13.46***
2	Post-test	10.03	1.49	

***Significant at P<0.001

Table 6 shows the comparison between subject's knowledge on prevention of secondary lymphedema, before and after the educational intervention. The obtained paired 't' value 13.46 was greater than table value and was highly significant level of (P<0.001). There was gain in knowledge score after educational intervention regarding prevention of secondary lymphedema. The comparison data is also depicted in fig no 12.

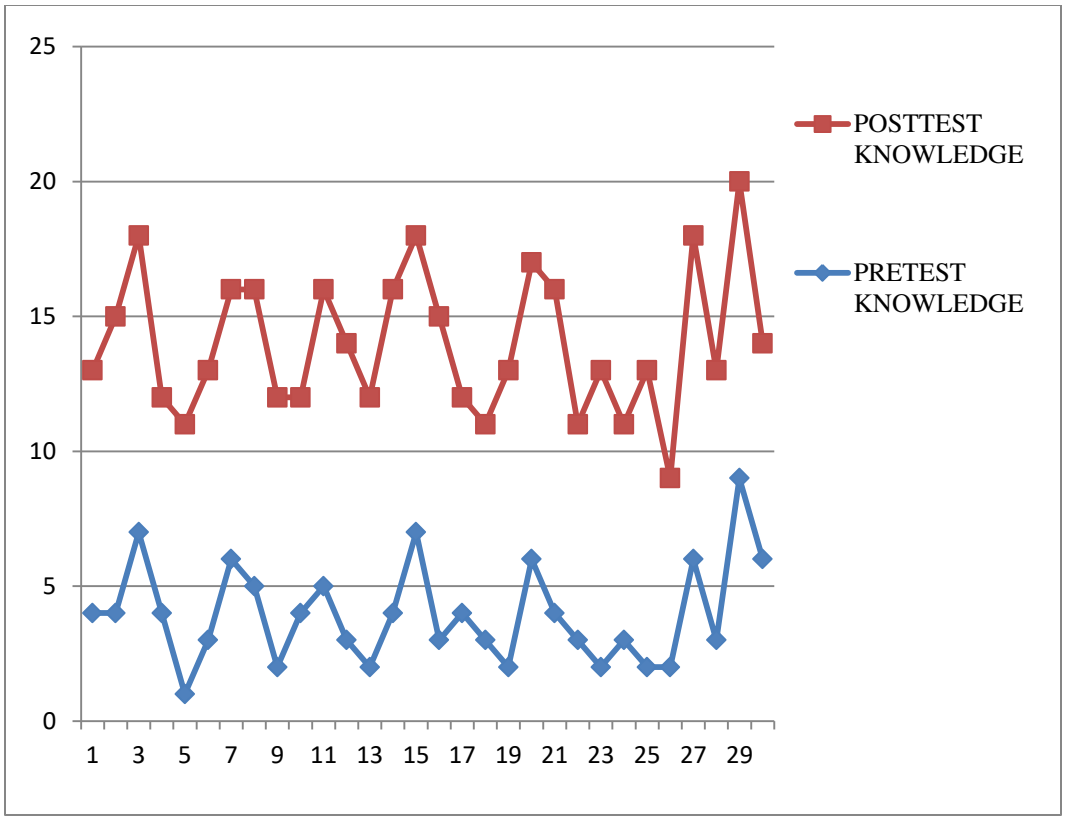


Figure-12. Comparison of pretest and posttest knowledge scores of subjects.

Comparison of Pretest and Posttest self-care scores of subjects .

Table-7: Comparison of Pretest and Posttest self-care scores of subjects. (N=30)

SL.NO	Self-care on prevention of secondary lymphedema	Mean	S.D	Paired 't' value
1	Pre-test	5.37	1.42	7.18***
2	Post-test	9.67	1.80	

***Significant at P< 0.001

Table 7shows the comparison between subject's self-care on prevention of secondary lymphedema before and after the educational intervention. The obtained paired t-value 7.18 was greater than the table value. The finding implies that there is a significant difference (p< 0.001) of self-care regarding prevention of secondary lymphedema after educational intervention at the level of P<0.001.

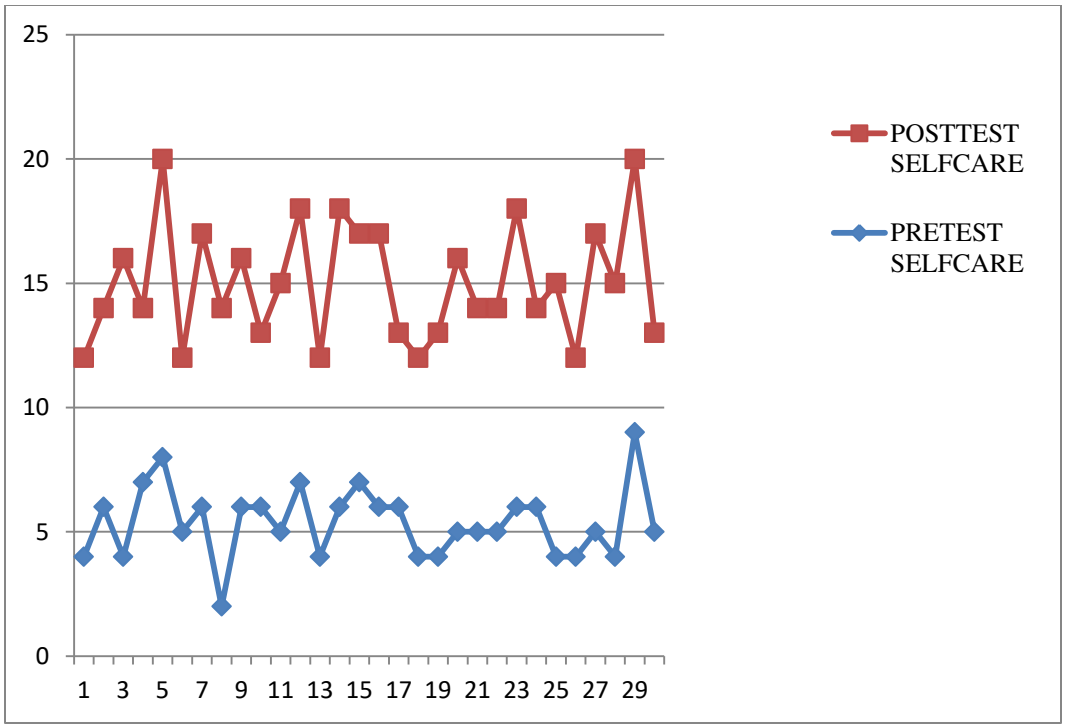


Figure-13. Comparison of pretest and posttest self-care scores

Comparison of Pretest and Posttest self-care score based on the performance of MLD.

Table-8: Comparison of Pretest and Posttest self-care scores of subjects. (N=30)

SL.NO	Self-care skills on prevention of secondary lymphedema	Mean	S.D	Paired 't' value
1	Pre-test	3.33	1.51	
2	Post-test	7.87	1.57	13.61***

***Significant at P<0.001.

Table 8 shows the comparison between subject's self-care score based on performance of MLD. The computed paired 't' value 13.61 was greater than the table value. The finding implies that there was a significant difference in pretest self-care skill and posttest performance regarding prevention of secondary lymphedema after educational intervention. The line diagram is also illustrated in the figure no 13.

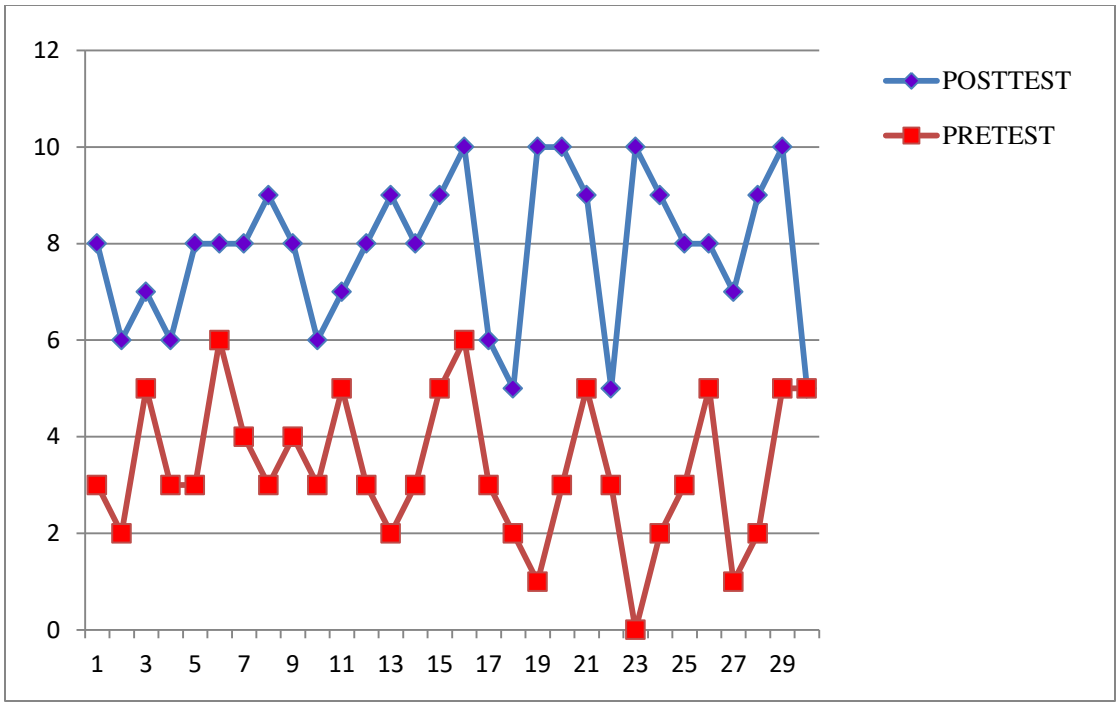


Figure-14. Comparison of pretest and posttest self-care score based on performance of MLD.

SECTION - D

Correlation of Posttest Knowledge and Posttest Self-care of subjects.

Table-9: Correlation of posttest knowledge and posttest self-care score of the subjects.

Variable	Mean	S.D	'r' value
Knowledge	10.03	1.49	0.64*
Self-care	9.67	1.80	

*Significant at 0.05 level

The table 9 shows that the computed r value 0.64 was significant at 0.05 level. It implied that there was positive correlation between knowledge and self-care. It means that when knowledge improves it influences the desirable self-care. Hence the present study documented that the educational intervention for prevention of secondary lymphedema were effective.

SECTION –E

Table-10: Association of selected demographic variables with Posttest knowledge score

SL. NO	Groups	Posttest knowledge score			df	χ^2
		Adequate	Average	Poor		
1	**Age in years**					
	a) 41-50 years	11	0	0		
	b) 51-60 years	8	4	0	3	7.2
	c) 61-70 years	5	0	0		NS
	d) >71 years	1	1	0		
2	**Education**					
	a) Illiterate	0	0	0		
	b) Primary	18	5	0	1	1.82
	c) Secondary	7	0	0		NS
	d) High Secondary	0	0	0		
	e) Graduate	0	0	0		
3	**Occupation**					
	a) Agriculture	9	2	0		
	b) Manual laborer	2	0	0	2	0.43
	c) Professional	0	0	0		NS
	d) Business	0	0	0		
	e) Unemployed	14	3	0		
4	**Body Mass Index**					
	a) Below 18.5	2	0	0		
	b) 18.5-24.9	17	5	0	2	2.18
	c) 25-29	6	0	0		NS
	d) Above 30	0	0	0		

5	**Type of surgery** a) Unilateral mastectomy b) Bilateral mastectomy c) Lumpectomy with axillary dissection d) Quadrantectomy /wide local excision with axillary dissection	12 2 6 5	2 0 2 1	0 0 0 0	5	2.05 NS
6	**Co-morbidity disease** a) Diabetes mellitus b) Hypertension c) Hyperthyroidism d) Hypothyroidism e) Diabetes mellitus with Hypertension	6 2 1 0 1	1 0 0 0 2	0 0 0 0 0	4	6.32 NS

Note:

NS – Non significant

Table 10 shows the values for association between the posttest knowledge score and selected demographical variable .The chi square values shows that there was no significant relation between posttest knowledge score and selected demographic variables.

Table-11: Association of selected demographic variables with self-care score

SL. NO	Groups	Posttest self-care score			df	x^2
		Adequate	Average	Poor		
1	**Age in years**					
	a) 41-50 years	7	4	0	3	2.89
	b) 51-60 years	6	6	0		NS
	c) 61-70 years	3	2	0		
	d) >71 years	0	2	0		
2	**Education**					
	a) Illiterate	0	0	0	1	7.98
	b) Primary	9	4	0		*
	c) Secondary	7	0	0		
	d) High Secondary	0	0	0		
	e) Graduate	0	0	0		
3	**Occupation**					
	a) Agriculture	7	4	0	2	0.74
	b) Manual laborer	1	1	0		NS
	c) Professional	0	0	0		
	d) Business	0	0	0		
	e) Unemployed	8	9	0		
4	**Body Mass Index**					
	a) Below 18.5	2	0	0	2	5.28
	b) 18.5-24.9	9	13	0		*
	c) 25-29	5	1	0		
	d) Above 30	0	0	0		

5	**Type of surgery** a) Unilateral mastectomy b) Bilateral mastectomy c) Lumpectomy with axillary dissection d) Quadrantectomy /wide local excision with axillary dissection	5 2 8 6	9 0 0 0	0 0 0 0	5	6.37 NS
6	**Co-morbidity disease** a) Diabetes mellitus b) Hypertension c) Hyperthyroidism d) Hypothyroidism e) Diabetes mellitus with Hypertension	5 1 1 0 0	2 1 0 0 3	0 0 0 0 0	4	5.23 NS

Note:

*significant at 0.05level; NS – Non significant

Table 11 shows the values for association between the posttest self-care score and selected demographical variable .The chi square values shows that there was significant relation between education and body mass index with selected demographic variables.

CHAPTER V

DISCUSSION, SUMMARY, CONCLUSION, IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

DISCUSSION:

This chapter deals with discussion, summary and conclusion drawn from the study. The study limitations, implications and recommendations in different areas of nursing practice, nursing administration, nursing research and nursing education in the future are considered here.

Secondary lymphedema is the accumulation of protein rich fluid. It can even occur after invasive procedures such as sentinel lymph node dissection. Patients with secondary lymphedema have chronic, progressive swelling, pain, recurrent infections, and significantly decreased quality of life. Prevention of secondary lymphedema is an important aspect in providing care to the patients who underwent axillary dissection for breast cancer. Reducing the secondary lymphedema is an important intervention in preventing the complications. Patient education plays a major role in improving the knowledge and self-care to provide proper care for the patients who underwent axillary dissection for breast cancer.

The present study was designed to assess the effectiveness of educational intervention on knowledge and self-care for prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer. To assess the effectiveness of educational intervention on knowledge and self-care. The investigator used the quasi experimental design. The major findings of the study are discussed on the formulated objectives.

Demographic characteristics of the subjects with axillary dissection for breast cancer

Out of 30 samples 36.7% belonged to the age group of 40-50 years, 40% were from the age group of 51-60 years and 16.6% were found between 61-70 years. Regarding the education majority samples 76.7% had primary education. Few 23.3%were

educated up to secondary level education. With regards to occupation more than half 56.7%of them were unemployed on job. Agricultural workers comprised on 36.7%. Based on Body mass index, 6.7% had below 18.5 kg/m_2; 73.3% varied between 18.5-25.9 kg/m_2 and 20% belonged25-29 kg/$m_2$category. Regarding the type of surgery 4.7% underwent unilateral mastectomy, 3.3% underwent bilateral mastectomy, 3.3% samples underwent simple mastectomy, 10% quadrantectomy, 26.7% axillary dissection and 10% samples underwent quadrantectomy with axillary dissection. Regarding co existing disease, 23.3% subjects had diabetes mellitus, 6.7% were hypertensive, 3.3% had history of hyperthyroidism and 10% of them had both diabetes and hypertension. Most 56.7%of the cancer victims never had any co-morbid illness.

The first objective was to assess the knowledge and self- care of patients with axillary dissection for breast cancer before and after educational intervention.

With regard to pretest knowledge score of subjects with axillary dissection for breast cancer, out of 30 subjects most of them (19)63.3% belonged to poor knowledge regarding prevention of secondary lymphedema. In posttest after educational intervention (22)73.3% of the study subjects scored adequate knowledge regarding prevention of secondary lymphedema.

With regard to self-care score of subjects with axillary dissection for breast cancer in pretest, among 30 subjects most of them (20)66.7% belonged to average self-care and (9)30% of them belonged to poor self-care regarding prevention of secondary lymphedema. In posttest after educational intervention (16)53.3% of the study subjects scored adequate self-care and (14)46.7% of them scored average self-care regarding prevention of secondary lymphedema.

With regard to self-care skill of observational checklist score in pretest, among 30 subjects most of them (19)63.3% belonged to poor self-care skills and (11)36.7% of them belonged to average simple self-care skills regarding prevention of secondary lymphedema. In posttest after educational intervention (23)76.7% of the study subjects scored adequate self-care skills and (7)23.3% of them scored average self-care regarding prevention of secondary lymphedema.

Current study is consistent with the findings of Hemarto 2007 who assessed the knowledge and practice on control and prevention of lymphedema following breast cancer treatment. They included 72 samples and structured questionnaire. The findings stated that the level of knowledge was inadequate among the patients, only 5% had adequate level of knowledge regarding control and prevention of lymphedema.

Present study is also congruent with the findings of Nicholas 2004, who assessed the knowledge and practice on control and prevention of lymphedema following breast cancer treatment. Study included 85 samples and structured questionnaire. The findings stated that the level of knowledge was inadequate among the patients, only 5% had adequate level of knowledge regarding control and prevention of lymphedema.

The second objective was to compare pretest and posttest knowledge and self-care scores on prevention of secondary lymphedema after axillary dissection for breast cancer.

Paired 't' test was used to compare the Pretest and Posttest knowledge scores, the 't' value was found 13.46 significant at 0.05, 0.01, 0.001 level. It indicated a significant difference in the knowledge on prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer before and after getting the educational intervention. The mean pre and posttest knowledge score of the subjects before and after educational intervention were 3.97 and 10.03 respectively and proved the effectiveness of educational intervention on knowledge enhancement.

Paired 't' test was used to compare the Pretest and Posttest self-care scores, the 't' value was found 7.18 significant at 0.05, 0.01, 0.001 level. It indicated a significant difference in the self-care on prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer before and after getting the educational intervention. The mean pre and posttest self-care score of the subjects before and after educational intervention were 5.37 and 9.67 respectively and proved the effectiveness of educational intervention on self-care enhancement.

Paired 't' test was used to compare the Pretest and Posttest self-care skill of observational checklist score, the 't' value was found 13.61 significant at 0.05, 0.01, 0.001 level.

It indicated a significant difference in the self-care skill on prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer before and after getting the educational intervention. The mean pre and posttest self-care skill score of the subjects before and after educational intervention were 3.33and 7.87 respectively and proved the effectiveness of educational intervention on self-care skill enhancement.

Present study is consistent with the results of Pastero. et al., 2005 who assessed the effectiveness of self-instructional module on preventive strategies of lymphedema following mastectomy and radiation therapy. The study was done on 85 samples, and found 85% increase in the knowledge of the patients following mastectomy and radiation therapy. Current study is also consistent with the findings of Hooman 2015 who evaluated the effectiveness of nurse-led self-care education. Sixty patients with breast cancer were assigned to either the nurse-led self-care education program (n = 30), or to routine care (n = 30). The intervention group had significantly greater improvements in quality of life status (P< 0.05). Study suggested that self-care education to be added to the routine nursing care delivered to these patients.

Therefore as stated earlier in H_1 there is significant difference in the pre-test and post-test knowledge and self-care scores of patients with axillary dissection for breast cancer and the hypothesis was accepted.

The third objective was to correlate the knowledge and self-care of patient with axillary dissection for breast cancer.

The comparison of Karl Pearson's co-efficient of correlation includes that a positive correlation (r= 0.64) between knowledge and self-care on prevention of secondary lymphedema after axillary dissection for breast cancer. The present study depicts that gain in knowledge improve the self-care for prevention of secondary lymphedema. Hence the formulated hypothesis H_2 is accepted.

The fourth objective was to associate knowledge and self-care score with selected demographic variables.

a. **Associate the selected demographic variables with their knowledge scores with axillary dissection for breast cancer.**

No association was found between the knowledge scores with selected demographic variables like age, education, occupation, body mass index and the clinical profiles of the subjects which include type of surgery, co-existing disease of the subject with axillary dissection for breast cancer.

Therefore as stated earlier, H_2 There will be a significant association in knowledge and self-care scores of patient who underwent axillary dissection for breast cancer surgery with selected demographic variables was rejected.

b. **Associate the selected demographic variables with their self-care scores with axillary dissection for breast cancer.**

The association of self-care using chi-square with the education of subjects reveals that the chi-square value is significant at 0.05 level, so it is concluded that there was significant difference in self-care scores of subjects for prevention of secondary lymphedema. The chi square value for self-care score of subjects was 7.98 which is statistically significant ($P<0.05$).

The association of self-care using chi-square with the body mass index of subjects reveals that the chi-square value is significant at 0.05 level, so it is concluded that there was significant difference in self-care scores of subjects for prevention of secondary lymphedema. The chi square value for self-care score of subjects was 5.28 which is statistically significant ($P<0.05$).

Similar finding was found with the study findings of a study to assess the effectiveness of self-instructional module on preventive strategies of lymphedema following mastectomy and radiation therapy. The study was done on 85 samples, there was 85% increase in the knowledge of the patients following mastectomy and radiation therapy.

Present study is consistent with the findings of Jutta 2008 who aimed to predict the simultaneous effect of demographic variables and on long-term quality

of life. Arm problems, communication, comorbidity, age, surgery and to a lesser extent, marital, educational and employment status were significantly associated with quality of life.

Therefore as stated earlier in $H_{2,}$ there will be a significant association in self-care scores of subjects who underwent axillary dissection for breast cancer surgery with selected demographic variables was accepted.

SUMMARY

The purpose of the study was to determine the effectiveness of educational intervention on knowledge and self-care for prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer. The study was conducted in KMCH Coimbatore.

The objective of the study were to

- assess the level of knowledge and self-care before and after educational intervention among patients who underwent axillary dissection for breast cancer.
- determine the effectiveness of educational intervention on level of knowledge and self-care among patients who underwent axillary dissection for breast cancer.
- Correlate the knowledge and self-care of patient with axillary dissection for breast cancer.
- associate the knowledge and self-care with selected demographic variable.

The following hypotheses were formulated.

H_1: There is a significant difference in the pre-test, post-test knowledge and self-care scores of patient who underwent axillary dissection for breast cancer surgery.

H_2: There will be a significant relationship between knowledge and self-care scores of patient who underwent axillary dissection for breast cancer surgery

H_3: There will be a significant association in knowledge and self-care scores of patient who underwent axillary dissection for breast cancer surgery with selected demographic variables.

The quasi-experimental one group pretest and posttest design was adopted for this study. The population of the study was 30 subjects who underwent axillary dissection for breast cancer. The conceptual framework adopted was Ludwig Von Bertalanfy's (1968). The study was conducted for 4 weeks in KMCH oncology ward and outpatient department. The subjects were selected by purposive sampling technique. The data collection was done by demographic data, structured self-administered questionnaire and observational checklist for assessing the knowledge and self-care of subjects after axillary dissection for breast cancer. After assessing pretest knowledge, self-care and self-care skills of the subjects, the computer assisted education on post-operative management after axillary dissection for breast cancer to prevent of secondary lymphedema was for 25 minutes. After 10 days Posttest was conducted. Descriptive and inferential statistics were used for the statistical analysis. Paired't' was used to compare the pretest and posttest knowledge, self-care and self-care skill scores. Karl Pearson's co-efficient of correlation was used to correlate the pretest and posttest knowledge, self-care and self-care skill scores. Chi square was used to find the association between the selected demographic variables with knowledge and the self-care scores.

Major findings of the study

- The paired ' t' test value for the mean difference between the pre and posttest knowledge of subjects for prevention of secondary lymphedema was 13.46 which was statistically significant (P<0.01, 0.05, 0.001). It is proved that there was a gain in knowledge of subjects after educational intervention. Hence the formulated hypothesis is accepted.
- The paired ' t' test value for the mean difference between the pre and posttest self-care of subjects for prevention of secondary lymphedema was 7.18 which was statistically significant (P<0.0, 0.05, 0.001) . It proved that there was a gain in self-care of subjects after educational intervention. Hence the formulated hypothesis is accepted.
- The mean difference between the pretest and posttest self-care skill was 3.33 and 7.87 respectively and paired t' value was 13.61. It shows that there was

improvement in self-care skill on prevention of secondary lymphedema. Hence the formulated hypothesis is accepted.

- Karl Pearson's co-efficient of correlation includes that a positive correlation (r= 0.64) between knowledge and self-care on prevention of secondary lymphedema. The present study depicts that gain in knowledge improves the self-care of subjects after axillary dissection for breast cancer. Hence the formulated hypothesis is accepted
- The association of self-care using chi-square with the education of subjects reveals that the chi-square value is significant at 0.05 level, so it is concluded that there was significant difference in self-care scores of subjects for prevention of secondary lymphedema. The chi square value for self-care score of subjects was 7.98.
- The association of self-care using chi-square with the body mass index of subjects reveals that the chi-square value is significant at 0.05 level, so it is concluded that there was significant difference in self-care scores of subjects for prevention of secondary lymphedema. The chi square value for self-care score of subjects was 5.28.

CONCLUSION

Today people in developing countries like India suffering from breast cancer. They are subjected to axillary dissection for breast cancer. Most of them do not possess either adequate knowledge or self-care to care themselves postoperatively. The educational intervention found to be very useful in improving the knowledge and self-care of subjects who got treated in KMCH oncology unit.

IMPLICATION

The postoperative secondary lymphedema are mainly due to lack of knowledge and ignorance on the self-care management after axillary dissection for breast cancer which is an essential component of preventing postoperative complication. The study on self-care management after axillary dissection for breast cancer has the following implications in various aspects of nursing education, practice and administration.

Implication for Nursing Education

- The students can learn to educate patients with different type of AV Aids such as video, brochure etc.
- The nurse educator can provide in-service education to all students and staff nurses about the newer methods of home care management on axillary dissection for breast cancer.
- Simulation type of teaching can be given for the nursing students related to care of postoperative patient after axillary dissection for breast cancer.
-

Implication for Nursing Practice

- The findings of the study highlight the importance of the level of knowledge and self-care on the postoperative management after axillary dissection for breast cancer.
- This study creates the awareness among the nurses and also the student nurses how to take care of the patient with axillary dissection for breast cancer.
- By giving the education is not enough, it needs frequent assessment and follow up care.
- The staff nurses can enhance their knowledge through the in-service education programme on care of patient with axillary dissection for breast cancer.

Implication for Nursing Administration

- The nursing administrative can motivate the nursing personnel to carry out small projects, workshop regarding the need for educating patient in advanced ways.
- Nurse administrator can make policy decision to incorporate educational intervention on management after axillary dissection for breast cancer in clinical setting based on evidence.
- Nurse administrator can monitor and supervise the nurses to update their knowledge in order to give effective education to the patients.
- The study is conducted in a particular setting.

LIMITATIONS:

- In this study one time observation was done for the clients.
- The Ejection Fraction <40% of the samples was not included in this study.
- The sample size of this study is small so the findings are not possible for generalization to a large group.
- The researcher has not used the random sampling technique and hence the generalization of findings is restricted.
- The findings can only be generalized to axillary dissection for breast cancer surgery.
- The study conducted only in a particular setting.
- The period for Follow-up is too short.

RECOMMENDATIONS

- Similar study can be conducted in a large group.
- Adherence to prescribed home care management can be assessed after the axillary dissection for breast cancer.
- Video Assisted Teaching and other forms of teaching material can be used.
- Quality of life after axillary dissection for breast cancer surgery can be assessed.
- The study can be done with experimental and control group.
- Based on the ejection fraction the level of skill can be assessed.

ABSTRACT

The study entitled “A study to assess the effect educational intervention on knowledge and self-care for prevention of secondary lymphedema among women who underwent axillary dissection for breast cancer at KMCH, Coimbatore. **Objective:** The aim of the study is assess the level of knowledge and self-care before and after educational intervention among patients who underwent axillary dissection for breast cancer, determine the effectiveness of educational intervention on level of knowledge and self-care among patients who underwent axillary dissection for breast cancer, correlate the knowledge and self-care of patient with axillary dissection for breast cancer, associate the knowledge and self-care with selected demographic variable. **Design:** Quasi experimental design. **Setting:** The Oncology unit of Kovai Medical Center And Hospital, Coimbatore. **Sample size:** 30 female subjects aged above 41 years undergoing axillary dissection for breast cancer were recruited for the study**. Conceptual framework:** Modified General System Theory Ludwig Von Bertalanfy’s model was used. **Data collection procedure:** After getting the verbal consent the demographic data was assessed then pretest regarding the knowledge, self-care and self-care skill was assessed. Then posttest knowledge, self-care and self-care skill was assessed for prevention of secondary Lymphedema. **Intervention:** A computer assisted teaching regarding the postoperative management was given to the subjects. **Results:** The subject who receives the intervention has improved the knowledge and had good self-care and adherence to the management was improved. **Conclusion:** The study results supported that administration of computer assisted teaching improves the knowledge and self-care of the samples.

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APPENDIX-A

DEMOGRAPHIC VARIABLES OF PATIENTS UNDERWENT AXILLARY DISSECTION FOR BREAST CANCER

SAMPLE NUMBER_____

DEMOGRAPHIC DATA

1. **Age**
- ☐ 18-30 years
- ☐ 31-40 years
- ☐ 41-50 years
- ☐ 51-60 years
- ☐ 61-70 years
- ☐ >71 years

2. **Education** :
- ☐ Illiterate
- ☐ Primary
- ☐ Secondary
- ☐ Higher secondary
- ☐ Graduate

3. **Occupation** :
- ☐ Agriculture
- ☐ Manual laborer
- ☐ Professional
- ☐ Business
- ☐ Unemployed

4. **BMI** :
- ☐ Below 18.5
- ☐ 18.5 – 24.9
- ☐ 25 – 29
- ☐ Above 30

5. **Type of surgery** :
- ☐ Unilateral mastectomy
- ☐ Bilateral mastectomy
- ☐ Simple mastectomy
- ☐ Radical mastectomy

- ☐ Quadrantectomy
- ☐ Axillary dissection
- ☐ Lumpectomy
- ☐ Quadrantectomy with axillary dissection

6. **Co – existing disease** :
   - ☐ Nil
   - ☐ Diabetes mellitus
   - ☐ Hypertension
   - ☐ Hyperthyroidism
   - ☐ Hypothyroidism
   - ☐ Diabetes mellitus with Hypertension

7. **Treatment modalities** :
   - ☐ Surgery alone
   - ☐ Surgery with radiation therapy
   - ☐ Surgery with chemotherapy
   - ☐ Surgery with both radiation and chemotherapy

APPENDIX - B

KNOWLEDGE QUESTIONNAIRE ON PREVENTION OF SECONDARY LYMPHEDEMA

NOTE: Read the following and put tick mark in the box for correct answer.

1. What is meant by lymphedema ?
   a) Lump in breast ☐
   b) Cyst in the breast ☐
   c) Swelling in arm/legs ☐
   d) All the above ☐
2. Lymphedema occurs more commonly in
   a) Cancer treatment patients ☐
   b) Mastectomy patients ☐
   c) Arthritis patients ☐
   d) All the above ☐
3. Which is the risk factor of lymphedema?
   a) Obesity ☐
   b) Women with early menopause ☐
   c) Immobility of arms ☐
   d) All the above ☐
4. What are the symptoms of lymphedema
   a) Heavy sensation in limb ☐
   b) Unusual swelling of all part of limb ☐
   c) Tightness of the skin ☐
   d) All the above ☐
5. How do you prevent lymphedema?
   a) Regular exercise ☐
   b) Healthy lifestyle ☐
   c) Rest ☐
   d) None of the above ☐

6. Where can you get information regarding lymphedema?
    a) Mass Media ☐
    b) Printed materials ☐
    c) Health personnel ☐
    d) All the above ☐
7. Which method do you sew the cloths manually?
    a) Using thimble ☐
    b) Using thread and needle ☐
    c) Sewing machine ☐
    d) All the above ☐
8. What are the positions of the limb to prevent contracture?
    a) Elevate above the level of heart ☐
    b) Elevate at the level of heart ☐
    c) Elevate below the level of heart ☐
    d) All the above ☐
9. What is the time duration for sitting in one position?
    a) 15 min ☐
    b) 30 min ☐
    c) 45 min ☐
    d) 60 min ☐
10. What are the complications of lymphedema?
    a) Cellulitis ☐
    b) Pain ☐
    c) Paralysis ☐
    d) All the above ☐
11. Which situation the exercise intensity can be reduced?
    a) Pain ☐
    b) Swelling ☐
    c) Fever ☐
    d) Discomfort ☐

12. What are the benefits of arm massage?

a) Stimulate blood flow ☐
b) Stimulate lymph flow ☐
c) Stimulate CSF flow ☐
d) All the above ☐

SELF-CARE QUESTIONNAIRE ON PREVENTION OF SECONDARY LYMPHEDEMA

NOTE: Read the following and put tick mark in the box for correct answer.

1. How can you cut the nails for lymphedema patients?
   a) Straight across ☐
   b) Oval across ☐
   c) Pointed across ☐
   d) All the above ☐

2. Which one of the following can be used for hair removal?
   a) Blades ☐
   b) Electric razors ☐
   c) Cream ☐
   d) Wax ☐

3. How can you avoid dry, cracked skin for lymphedema patients?
   a) Moisturizer ☐
   b) Hot water ☐
   c) Un perfumed moisturizer ☐
   d) All the above ☐

4. Which extremity should be used for testing temperature of water?
   a) Affected extremity ☐
   b) Unaffected extremity ☐
   c) Both extremity ☐
   d) All the above ☐

5. Which arm can you carry hand bag?
   a) Unaffected arm ☐
   b) Affected arm ☐
   c) Both Arm ☐
   d) Both Arm should not be used ☐

6. Which arm should be monitored for Blood Pressure?

a) Unaffected arm
b) Affected arm
c) Both arm
d) Both Arm should not be used

7. How will you hold an hot vessel by using

a) Oven gloves
b) Cloths
c) Pot holder
d) All the above

8. Arms should be always kept

a) Dry
b) Wet
c) Both
d) All the above

9. How will you protect limb from bites?

a) Long sleeved cotton garments
b) Insect repellent
c) Bandages
d) All the above

10. How many times the massages should be repeated in a day?

a) One times
b) Two times
c) Three times
d) Four times

11. How to apply massages in arm?

a) Gentle manner
b) Moderate manner
c) Extreme manner
d) All the above

12. Which area massage can be started from?

a) Non operated side to operated side ☐
b) Operated side to non-operated side ☐
c) Operated side only ☐
d) Non operated side only ☐

13. What are the simple self-care exercises for the prevention of lymphedema?

a) Wall climbing ☐
b) Open close hands ☐
c) Attaching the bra ☐
d) All the above ☐

APPENDIX - C

OBSERVATION CHECKLIST TO ASSESS SELF-CARE SKILLS FOR PREVENTION OF SECONDARY LYMPHEDEMA

SL.NO	OBSERVATION CHECKLIST	YES	NO
1.	Nails can be cut straight across		
2.	Affected extremity can be used for testing temperature of		
3.	Insect repellent can be used to protect limb from bites		
4.	Wall climbing, open close hands are the simple self-care		
5.	Arms should always kept wet		
6.	Affected arms should be monitored for BP		
7.	Blades can be used for hair removal		
8.	Massage should be repeated three times in a day		
9.	Massages should be applied in gentle manner		
10.	Massage can be started from non-operated side to operated		

APPENDIX - D

POST-OPERATIVE MANAGEMENT OF SECONDARY LYMPHEDEMA AFTER AXILLARY DISSECTION FOR BREAST CANCER SURGERY

Now we can see about Lymphatic system and its vessels.

The lymphatic system is integral to the immune system. It drains and transports 'waste materials' from interstitial tissues to the blood stream, including cell products such as protein, water and fat. These materials are filtered by lymph nodes before entering the venous system. Lymph is a clear-to-white fluid made of:

- White blood cells, especially lymphocytes
- Fluid from the intestines, called chyle, which contains proteins and fats.

Definition

Lymphedema is a condition of localized fluid retention and tissue swelling caused by a compromised lymphatic system, which normally returns interstitial fluid to the thoracic duct, then the bloodstream.

Types:

- Primary lymphedema
- Secondary lymphedema

Risk Factors for Lymphedema

- Disease related
  - Stage of a tumour and its location
  - Recurrence of a tumour or spread to the lymph nodes
- Treatment related
  - Drain/wound infection
  - Seroma formation

- Scar formation, fibrosis and radiation therapy related dermatitis
- Radiation therapy to the lymph nodes.

➢ Patient related

- High BMI > 30 kg/m2
- Hypertension:(more than 130/90 mm Hg).
- Older age groups (>65 years of age)
- Poor mobility
- Previous cellulitis

Signs and Symptoms

- Limb heaviness.
- Skin tightness.
- Itching or burning sensation
- Diminished joint movement.
- Difficulty in fitting clothing, jewellery and shoes.
- Limb swelling (e.g. deep venous thrombosis).
- Patients should be carefully evaluated for any evidence of cellulitis

Prevention and Early Detection

- A lower incidence of lymphedema has been found in patients who exercise regularly and perform preventive self-care activities.
- Cut nails straight across.
- Do not use blades for hair removal instead use electric razors
- Avoid dry, cracked or flaky skin. Use good quality un perfumed moisturizer to keep the skin moist
- Cracked areas of skin should be washed, with soap and water and dried carefully
- Wear oven gloves for gardening
- Use a thimble for sewing
- Avoid exposure to extreme heat or cold - use the unaffected extremity to test temperatures (e.g. for bathwater or cooking).

- Use insect repellent.
- Be alert for the signs of infection (fever, swelling, redness, pain, and heat) and see your doctor if you suspect infection.

Diet and Healthy Weight

- The risk of lymphedema increases in those who are overweight or obese.
- Maintaining a normal weight and eating a healthy diet are an important part of healthy survivorship.

Precautions and Causes

- Limb exercises should begin as soon as possible after surgery.
- The exercises should be done slowly.
- If there is pain the exercises can be reduced but not stopped.

Benefits of Exercise

- It will stimulate lymph flow from the limb and reduce the risk of lymphedema.
- Extreme exercise will promote inflammation and injury and should be avoided in patients at risk for lymphedema.

Travel, Sun and Heat

- Additional precautions are recommended during long journey:
- The affected area should be gently exercised and elevated, where possible
- Never stay sitting for long periods when travelling.
- Drink plenty of water during hot weather
- Wear long sleeved cotton garments to protect the limbs from bites or burns
- Use of sun screen (minimum of SPF 15 – 30)
- Do not use a hot tub or put the affected limb into a very hot bath
- Never use a sunbed.

Positioning of the Limb to Prevent Contractures

- Keep the arm elevated above the level of the heart when possible.
- Do not sit in one position for longer than 30 minutes
- Wear loose jewellery and clothes with no constricting bands
- Avoid blood pressure monitoring on the affected arm
- Wear a professionally fitted comfortable bra

Self-care

- SIMPLE SELF CARE EXERCISES

PURPOSE:

- To regain full range of movements following breast cancer surgery.
- Increase blood flow
- Arm rehabilitation

Exercise 1: Wall Climbing. This is done in two positions:

- 1. Facing a wall.
- 2. Sideways to a wall.

Exercise 2: This is of two types.

- **Open – Close Hands:** Open and close fists at various heights.
- **Attach the necklace:** These exercises should be carried out five times a day, using the affected arm to breathe deeply while doing the exercises.
- Bring both hands to back of neck as if to attach the necklace.

Exercise 3: Attaching the Bra.

1. Breath deeply while doing the exercises.
2. Bring both hands at back as if attaching the bra
3. It may be painful but will ease while healing progresses.

Wrist Exercise

1. Sit straight on a chair.
2. Move both hands upwards at the most and then rotate clockwise and anti clockwise.
3. Take a deep breath
4. Repeat for 5 times.

Elbow Exercise

1. Sit straight on a chair
2. Take a deep breath
3. Lift arm to shoulder level
4. Bend the elbow and straighten it
5. Repeat for 5 min

Shoulder bracing exercise

1. Sit straight on a chair
2. Take a deep breath
3. Lift both arms forwards to the shoulder level with palm facing downwards
4. Bend elbow inwards towards the chest
5. Bring hands backwards along with the shoulders as far as possible
6. Hold it for 10 sec and then relax
7. Repeat for 5 min

Shoulder exercise

1. Sit straight on a chair
2. Take deep breath
3. Lift arms forwards with the elbow straight, palm facing downwards, as far as possible and then bring it down.
4. Repeat for 5 min
5. Lie on your back
6. Hold a stick with both the hands forwards, keeping the elbow straight

7. Lift the stick as far as possible and then bring it down.

Simple Lymphatic Drainage

- Lymphatic massage is extremely gentle and light. The aim of this massage is to stimulate the lymph channels in the trunk so excess fluid can drain. The skin is always moved away from the affected (treated) side. It may be easier to start with one hand, and then swap to the other as you move across the body.

Procedure:

1. Gently place your fingers on either side of neck.
2. Gently move fingers over the skin down towards the back of the neck. Repeat this exercise10 times.
3. On top of shoulder use a gentle movement around the front neck towards the top of breastbone (where the collarbones meet).
4. Repeat this exercise five times.
5. Starting in the armpit on the non-operated side, using a light pressure, gently stretch the skin up into the armpit.
6. Keeping hand flat and gently move over the skin to the opposite arm-pit.
7. Repeat five times.
8. Slowly stretch the skin towards the non operated side.
9. Repeat five times.

Complications:

- Cellulitis
- Inflammation of the lymphatic vessels
- Deep venous thrombosis

"By following all those things, we wish you to have a good health"

Thank You

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   - □ ®) §Áü¸¡Ïõ ±Ð×Á¢ø¨Ä

6. ¿¢½¿£÷ §¾ì¸ Å£ì¸õ ÌÈ¢ò¾ ¾¸Åø¸¨Ç ±íÌ «È¢óÐ ¦¸¡ûÇ ÓÊÔõ?
   □ «) ¦ÅÌƒÉ °¼¸õ
   □ ¬) «î°¢¼ôÀð¼ ¦À¡Õð¸û
   □ þ) Í¸¡¾¡Ã À½¢Â¡Ç÷¸û
   □ ®) §Áü¸¡Ïõ «¨ÉòÐõ

7. ¨¸ò¨¾Âø ¨¾ìÌõ ¦À¡ØÐ ¸£úì¸¡Ïõ ±ó¾ Ó¨È¨Âô ÀÂýÀÎòÐÅ£÷¸û?
   □ «) Å¢ÃÖìÌ ¯¨È «ÏÅ¢ò¾ø
   □ ¬) °°¢, áø ÀÂýÀÎòÐ¾ø
   □ þ) ¨¾Âø þÂó¾¢Ãõ
   □ ®) §Áü¸¡Ïõ «¨ÉòÐõ

8. ±ó¦¾ó¾ ¿¢¨ÄÂ¢ø ¨¸¸¨Ç ¨Åò¾¡ø §¾¡ø ÍÕì¸í¸û ÅÕÅ¨¾ ¾Îì¸Ä¡õ?
   □ «) þ¾Âò¾¢ý «Ç×ìÌ §Áø àì¸¢ ¨Åò¾ø
   □ ¬) þ¾Â «ÇÅ¢ø ¨Åò¾ø
   □ þ) þ¾Â «ÇÅ¢üÌ ¸£ú ¨Åò¾ø
   □ ®)§Áü¸¡Ïõ «¨ÉòÐõ

9. ±ò¾¨É Á½¢§¿Ãõ ´§Ã ¿¢¨ÄÂ¢ø ¯ð¸¡ÃÄ¡õ?
   □ «) 15 ¿¢Á¢¼õ
   □ ¬) 30 ¿¢Á¢¼õ
   □ þ) 45 ¿¢Á¢¼õ
   □ ®) 60 ¿¢Á¢¼õ

10. ¿¢½¿£÷ §¾ì¸ Å£ì¸ò¾¢É¡ø ²üÀÎõ °¢ì¸ø¸û ±ýÉ?
   □ «) ¯Â¢ÃÏ Å£ì¸õ
   □ ¬) ÅÄ¢
   □ þ) Àì¸Å¡¾õ
   □ ®) §Áü¸¡Ïõ «¨ÉòÐõ

11. ±ó¾ Ýú¿¢¨ÄÂ¢ø ¯¼üÀÂ¢ü°¢ ¾£Å¢ÃÁ¡¸ ¦°öÅ¨¾ Ì¨Èì¸Ä¡õ?
   □ «) ÅÄ¢ þÕìÌõ ¦À¡ØÐ

□ ¬) Å£ì¸õ ¸¡½ôÀÎõ ¦À¡ØÐ
□ þ) ¸¡öî°Ä¢ý ¦À¡ØÐ
□ ®) ¯¼ø §¸¡Ç¡Ú ²üÀÎõ ¦À¡ØÐ

12. ¨¸¸Ç¢ø Á°¡^ ¦°öÅ¾¡ø ²üÀÎõ ÀÂý¸û ±ýÉ?
□ «) þÃò¾ µð¼ò¨¾ò àñÎõ
□ ¬)¿¢½¿£÷ µð¼ò¨¾ àñÎõ
□ þ) °¢ ±Š ±·ô ¿£÷ µð¼ò¨¾ àñÎõ
□ ®) §Áü¸¡Ïõ «¨ÉòÐõ

ÍÂÀЯтюЯЙЦЧ **Ó¨ÈÂ¢¨É ¸ñ¼È¢Ôõ Å¢É¡ì¸û**

ÌÈ¢ôÒ : ¸£úì¸ñ¼¨Å¸¨Ç Å¡°¢òÐ ¦¸¡Îì¸ôÀð¼ ¸ð¼ò¾¢ø °¡¢ ±ýÚ ÌÈ¢ì¸×õ.

1. ¿¢½¿£÷ §¾ì¸ Å£ì¸õ ¯¨¼Â §¿¡Â¡Ç¢¸Ùõ ¿¸õ ¦ÅðÎÅÐ ±ôÀÊ?
   - □ «) ÓØÅÐõ §¿Ã¡¸
   - □ ¬) ÓØÅÐõ ¿£û Åð¼Á¡¸
   - □ þ) ÓØÅÐõ Ü÷¨ÁÂ¡¸
   - □ ®) §Áü¸¡Ïõ «¨ÉòÐõ

2. ÓÊ «¸üÚÅ¾üÌ ¯¸ó¾ ÅÆ¢Ó¨È ±Ð?
   - □ «) À¢§ÇÎ
   - □ ¬) Á¢ýÉÏ Ü÷ ¦Áû ¸ò¾¢
   - □ þ) ¸Ç¢õÒ¸û
   - □ ®) ¦ÁØÌ

3. ¿¢½¿£÷ §¾ì¸ Å£ì¸õ ¯ûÇ §¿¡Â¡Ç¢¸û ÅÈñ¼ §¾¡Ä¢ø ¸£Ãø Å¢Æ¡Áø
   ¾ÎôÀÐ ±ôÀÊ?
   - □ «) ®ÃôÀ¾ ¸Ç¢õÒ
   - □ ¬) ¦Åó¿£÷
   - □ þ) Å¡°¨Éò ¾¢ÃÅ¢ÂÁ¢øÄ¡¾ ®ÃôÀ¾ ¸Ç¢õÒ
   - □ ®) §Áü¸¡Ïõ «¨ÉòÐõ

4. ¾ñ½£¡¢ý ¦ÅôÀ¿¢¨Ä ¸ñ¼È¢Â ±ó¾ ¨¸¸¨Ç ÀÂýÀÎò¾Ä¡õ?
   - □ «) À¡¾¢ì¸ôÀð¼ ¨¸
   - □ ¬) À¡¾¢ì¸ôÀ¼¡¾ ¨¸
   - □ þ) þÃñÎ ¨¸¸¨ÇÔõ
   - □ ®) §Áü¸¡Ïõ «¨ÉòÐõ

5. ±ó¾ ¨¸Â¢ø ¨¸ô¨À¨Â ±ÎòÐì ¦¸¡ñÎ §À¡¸Ä¡õ?
   - □ «) À¡¾¢ì¸ôÀ¼¡¾ ¨¸
   - □ ¬) À¡¾¢ì¸ôÀð¼ ¨¸
   - □ þ) þÃñÎ ¨¸¸Ùõ
   - □ ®) þÃñÎ ¨¸¸Ùõ ¯À§Â¡¸¢ì¸ì Ü¼¡Ð

6. þÃò¾ì ¦¸¡¾¢ôÀ¢ý «Ç¦ÅÎì¸ ±ó¾ ¨¸¨Â ¯À§Â¡¸¢ì¸ §ÅñÎõ?
   - □ «) À¡¾¢ì¸ôÀ¼¡¾ ¨¸
   - □ ¬) À¡¾¢ì¸ôÀð¼ ¨¸
   - □ þ) þÃñÎ ¨¸¸Ùõ
   - □ ®) þÃñÎ ¨¸¸Ùõ ¯À§Â¡¸¢ì¸ì Ü¼¡Ð

7. Ý¼¡É À¡ò¾¢Ãò¨¾ À¢Êì¸ ±¾¨Éô ÀÂýÀÎò¾ §ÅñÎõ?

□ «) Ý¨Ç ¨¸Ô¨È¸û
□ ¬) Ð½¢
□ þ) À¡ò¾¢Ã À¢Ê / À¡ÉÀ¢Ê
□ ®) §Áü¸¡Ïõ «¨ÉòÐõ

8. ¨¸¸¨Ç ±ô¦À¡ØÐõ ±ôÀÊ ¨ÅòÐì¦¸¡ûÇ §ÅñÎõ?
□ «) ¯Ä÷Å¡¸
□ ¬) ®ÃôÀ¾Ó¼ý
□ þ) þÃñÎõ
□ ®) §Áü¸¡Ïõ «¨ÉòÐõ

9. ±ôÀÊ ¨¸¸¨Ç âî°¢ ¸ÊÂ¢Ä¢ÕóÐ À¡¾¢ì¸ §ÅñÎõ.
□ «) ¿£ÇÁ¡É ÀÕò¾¢ ¨¸ ¯¨¼
□ ¬) âî°¢ ¾ÎôÀ¡ý
□ þ) Ð½¢ì¸ðÎ
□ ®) §Áü¸¡Ïõ «¨ÉòÐõ

10. ±ùÅ¨¸ ±Ç¢Â ÍÂ ¯¼üÀÂ¢ü°¢ ãÄõ ¿¢½¿£÷ §¾ì¸ Å£ì¸ò¨¾ ¾Îì¸ ÓÊÔõ?
□ «) ÍÅ÷ ²Ú¾ø
□ ¬) ¨¸¸¨Ç ¾¢ÈóÐ ãÎ¾ø
□ þ) 'ôÃ¡' ¦¸¡ì¸¢¨Â þ¨½ò¾ø
□ ®) §Áü¸¡Ïõ «¨ÉòÐõ

11. ´Õ ¿¡Ç¢ø ±ò¾¨É Ó¨È Á°¡^ ¦°öÂ §ÅñÎõ?
□ «) ´Õ Ó¨È
□ ¬) þÃñÎ Ó¨È
□ þ) ãýÚ Ó¨È
□ ®) ¿¡ýÌ Ó¨È

12. ¨¸¸ÙìÌ ±ùÅ¡Ú Á°¡^ ¦¸¡Îì¸ §ÅñÎõ?
□ «) ¦Áý¨ÁÂ¡É Ó¨ÈÂ¢ø
□ ¬) Á¢¾Á¡É Ó¨ÈÂ¢ø
□ þ) ¾£Å¢Ã Ó¨ÈÂ¢ø
□ ®) §Áü¸¡Ïõ «¨ÉòÐõ

13. ±ó¾ ÀÌ¾¢Â¢Ä¢ÕóÐ Á°¡¨ƒ ¦¾¡¼í¸ §ÅñÎõ?
□ «) «Ú¨Å°¢¸¢î¨° ¦°öÂôÀ¼¡¾ ÀÌ¾¢Â¢Ä¢ÕóÐ «Ú¨Å °¢¸¢î¨° ¦°öÂôÀð¼ ÀÌ¾¢Å¨Ã
□ ¬) «Ú¨Å°¢¸¢î¨° ¦°ö¾ ÀÌ¾¢Â¢Ä¢ÕóÐ «Ú¨Å °¢¸¢î¨° ¦°öÂôÀ¼¡¾ ÀÌ¾¢Å¨Ã

□ þ) «Ú¨Å°¢¸¢î¨° ¦°öÂôÀð¼ ÀÌ¾¢ ÁðÎõ.
□ ®) «Ú¨Å°¢¸¢î¨° ¦°öÂôÀ¼¡¾ ÀÌ¾¢ ÁðÎõ

APPENDIX -E

KMCH COLLEGE OF NURSING
(Approved by the Government of Tamil Nadu & The Tamil Nadu Nurses & Midwives Council, Chennai.
Recognized by the Indian Nursing Council, New Delhi and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)
KMCH Campus, Avinashi Road, Coimbatore – 641 014. INDIA
Ph: (0422) 4323740, 2369321 Telefax : (0422) 2627525 Website: kmchcon.ac.in E-mail: nursing@kmch.ac.in

Ref No: KMCT/6029/01/17

31st January 2017

To

Dr. FIROZ RAJAN MS., MCh (Surgical Oncology)
Consultant Surgical Oncologist
Kovai Medical Center and Hospital,
Coimbatore – 14

Dear Sir,

Greetings to you.

I submit that one of our M.SC(N) final year students by name Ms. Pushpa Jo Simon specializing in Medical Surgical Nursing in our College desires to conduct a study titled **" A Study to assess the effectiveness of educational intervention on knowledge and self care for prevention of secondary Lymphedema among women following modified Radical Mastectomy at KMCH, Coimbatore",** as a part of her M.Sc (N) curriculum.

As she is in need of Medical Expert to complete the study, I request you to kindly guide the student.

Thanking you,

Yours Truly,

Prof. DR. S. Madhavi, M.Sc(N)., Ph.D.,
Principal.

The Principal,
K.M.C.H. College of Nursing,
P.B. No : 3209, Avanashi Road,
Coimbatore - 641 014.

KMCH COLLEGE OF NURSING ★ COIMBATORE-641014

Dr. Firoz Rajan
MS, MCh (Surgical Oncology)
Consultant Surgical Oncologist
Reg. No : 49954
Kovai Medical Center and Hospital
Avanashi Road,
Coimbatore - 641 014, India

APPENDIX-F

KMCH ETHICS COMMITTEE
KOVAI MEDICAL CENTER AND HOSPITAL LIMITED
Post Box No. 3209, Avanashi Road, Coimbatore - 641 014. INDIA
✆ : (0422) 4323800, 4323619 Fax : (0422) 4270805
E-mail : ethics@kmchhospitals.com
EC Reg. No : ECR / 112 / Inst / TN / 2013

Ref: EC/AP/528/03/2017
13.03.2017

APPROVED

To
Prof.P.Viji
Dept of Medical Surgical Nursing
KMCH college of Nursing
Coimbatore-641014
Tamilnadu, India.

Dear Prof.P.Viji ,

The proposal entitled **"A study to assess the effectiveness of educational intervention on knowledge and self care for prevention of secondary Lymphedema among women who underwent axillary dissection for breast cancer surgery at KMCH, Coimbatore"** Submitted by **Ms.Pushpa Jo Simon,** under your guidance was reviewed by the Ethics Committee in its meeting held on 11.03.2017 and permission is granted to carry out the study at Kovai Medical Center and Hospital Ltd, Coimbatore, India.

Thanking you,

Yours faithfully,

Dr. P. R. Muthuswamy
Chairman, KMCH Ethics Committee

Dr. P. R. MUTHUSWAMY,
MA.,MEA. FDPM(IIM-A)Ph.D.,
Chairman
Ethics Committee
Kovai Medical Center and Hospital
Avanashi Road,
COIMBATORE-641 014.

Copy to:
Medical guide:
Dr.Firoz Rajan, MS.,MCh (Surgical Oncology)
Consultant Surgical Oncologist
Kovai Medical Center and Hospital
Research guide:
Prof.Dr.S.Madhavi, M.Sc(N).,Ph.D.,
Principal
KMCH college of Nursing

APPENDIX-G

CERTIFICATE OFCONTENT VALIDITY

This is to certify that I have perused the research proposal submitted by Ms.Pushpa Jo Simon entitled as "**A study to assess the Effectiveness of educational intervention on knowledge and self-care for prevention of Secondary Lymphedema among women who underwent axillary dissection for breast cancer surgery at KMCH, Coimbatore**".

I found that methodology of the content and tool are appropriate.

Date:

4/5/17

Signature with Seal

Dr. R. Madhu Sairam., M.D. (R.
Consultant, Radiation Oncology
Kovai Medical Center & Hospital
TNMC Reg. No : 81526

APPENDIX – H

CERTIFICATE OFCONTENT VALIDITY

This is to certify that I have perused the research proposal submitted by Ms.Pushpa Jo Simon entitled as "**A study to assess the Effectiveness of educational intervention on Knowledge and Self care for prevention of Secondary Lymphedema among women who underwent axillary dissection for breast cancer surgery at KMCH,Coimbatore**".

I found that translation of the content and tool are appropriate.

Date: 01.08.2017

Signature With Seal

தமிழ்த்துறைத் தலைவர்
டாக்டர் என். ஜி. பி. கலை அறிவியல் கல்லூரி
கோயம்புத்தூர்-641 035

APPENDIX- I

MOUNT ZION MEDICAL COLLEGE

CHAYALODE P.O, EZHAMKULAM,ADOOR, PATHANAMTHITTA DIST., KERALA-691 556
Ph: 04734-241200, E-mail: mountzionmedicalcollege@yahoo.com,
www.mountzionmedicalcollege.com

Ref: *Date:*.....

29-12-2016

MZMC/EXP

TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Ms. PUSHPA JO SIMON** have completed 2days on the job training in our institution, MOUNT ZION MEDICAL COLLEGE, CHAYALODE,ADOOR about **'MANUAL LYMPHATIC DRAINAGE'** from the period between 23-12-2016 to 24-12-2016 .

We wish her all the very best in her future endeavors.

Mr. SIBY VARGHESE
ADMINISTRATOR

ZION MEDICAL COLLEGE ADOOR CHAYALODE

APPENDIX-G

LIST OF EXPERTS

1. **Prof.DR.S.MADHAVI, M.Sc. (N), Ph.D.,**
   Principal and Head of the department of Medical Surgical Nursing,
   KMCH College of Nursing
   Coimbatore-641014
2. **Dr.FIROZ RAJAN MS.,M.Ch,**
   Consultant Surgical Oncology,
   Kovai Medical Centre and Hospital,
   Coimbatore- 14
3. **Dr.MADHU SAIRAM R, MR**
   Consultant Radiation Oncology,
   Kovai Medical Centre and Hospital,
   Coimbatore- 14
4. **Prof.P.VIJI,M.Sc(N), Ph.D.,**
   Department of Medical Surgical Nursing Nursing,
   KMCH College of Nursing,
   Coimbatore-641014
5. **Prof. K.BALASUBRAMANIAN,M.Sc(N), Ph.D.,**
   Department of Medical Surgical Nursing,
   KMCH College of Nursing,
   Coimbatore-641014

6. **Prof.DR.P.AKILA, M.Sc. (N), Ph.D.,**
   Department of Medical Surgical Nursing,
   KMCH College of Nursing
   Coimbatore-641014
7. **MR.N.KUPPUSAMY,MA,Ph.D.,**
   Department of Tamil,
   DR.N.G.P. Arts and Science College,
   Coimbatore-641035.
8. **Mrs.VENNILA, MSC stat,**
   Mathematics and biostatistics lecturer,
   KMCH College of Nursing,
   Coimbatore-641014.


WELCOME

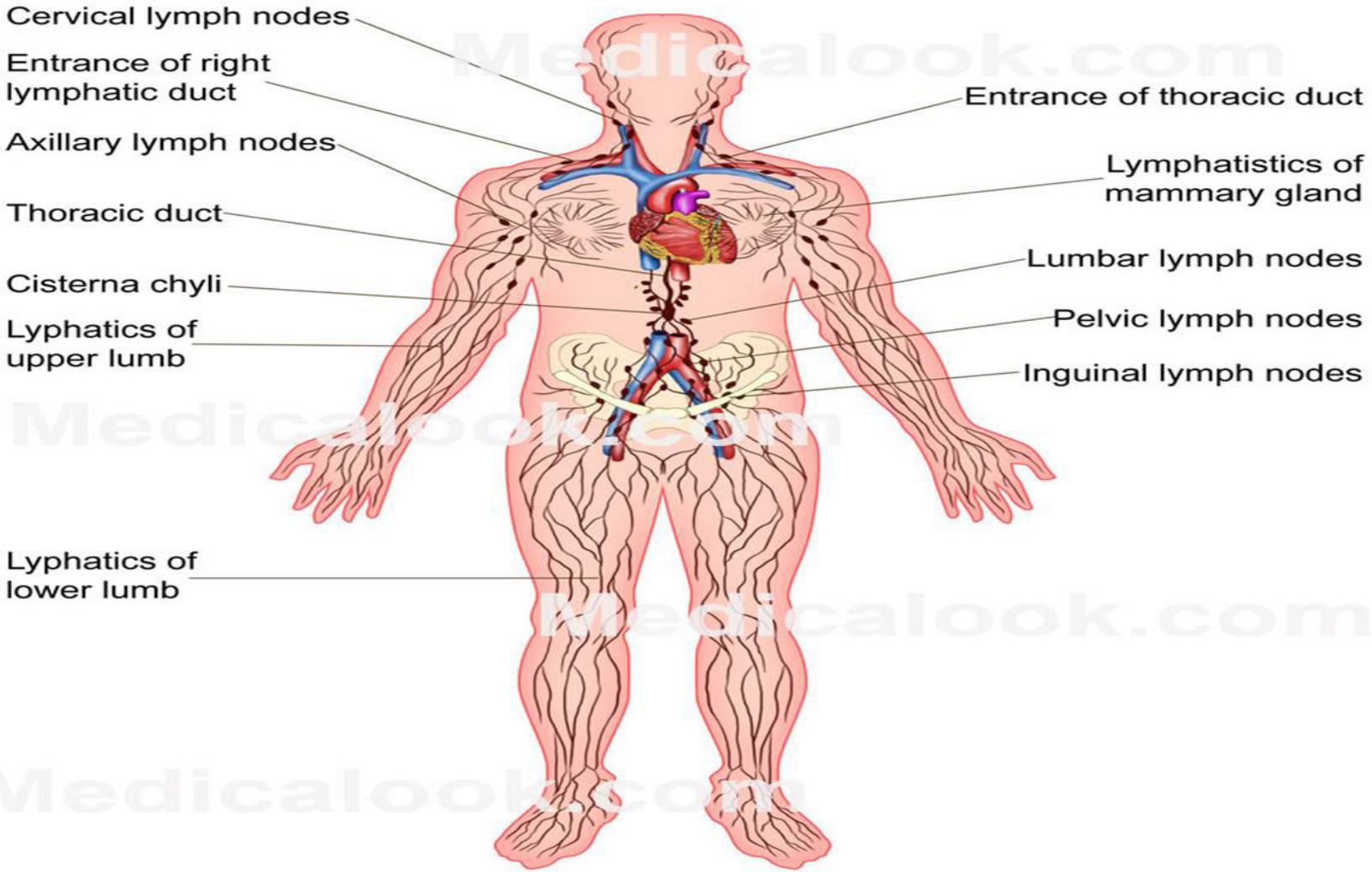
Anatomy of the Lymphatic System

- The lymphatic system is integral to the immune system. It drains and transports ‘waste materials’ from interstitial tissues to the blood stream, including cell products such as protein,water and fat.

- These materials are filtered by lymph nodes before entering the venous system.

- Lymph is a clear-to-whitefluid made of:
- White blood cells, especially lymphocytes
- Fluid from the intestines, called chyle, which contains proteins and fats.

LYMPHATIC SYSTEM



What is Lymphoedema?

Lymphedema is a condition of localized fluid retention and tissue swelling caused by a compromised lymphatic system, which normally returns interstitial fluid to the thoracic duct, then the bloodstream.

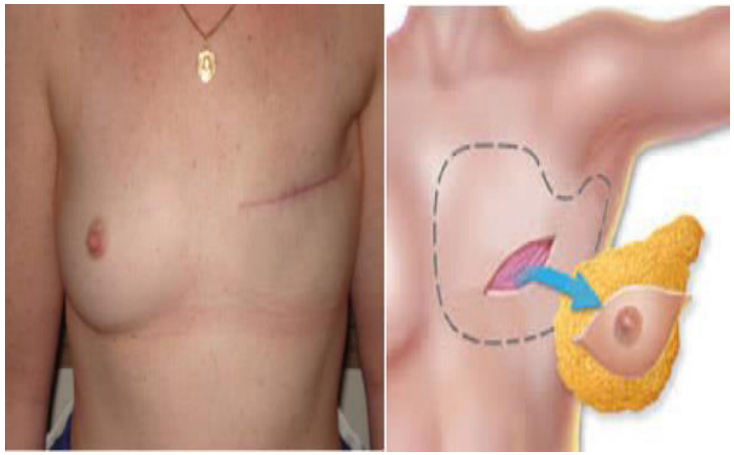
- TYPES:
  - Primary lymphedema
  - Secondary lymphedema

- Primary lymphedema is related to congenital malformation of the lymphatic channels.

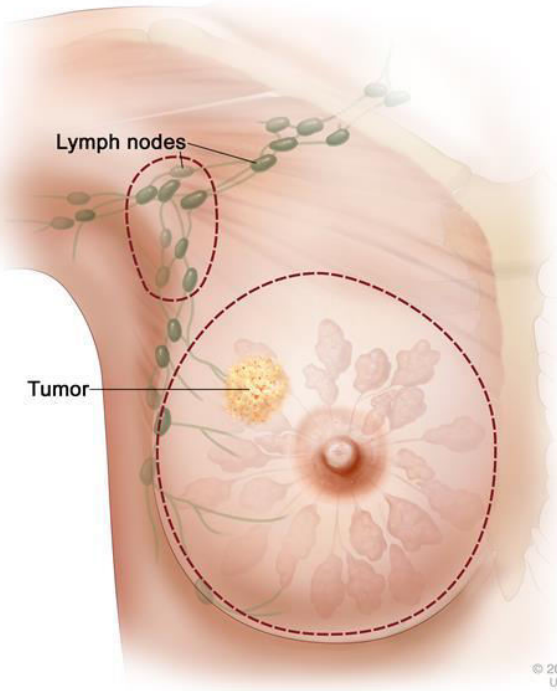
- Secondary lymphedema results from illness(swelling of the soft tissues) or treatment that obstructs lymphatic drainage

Risk Factors for Lymphedema

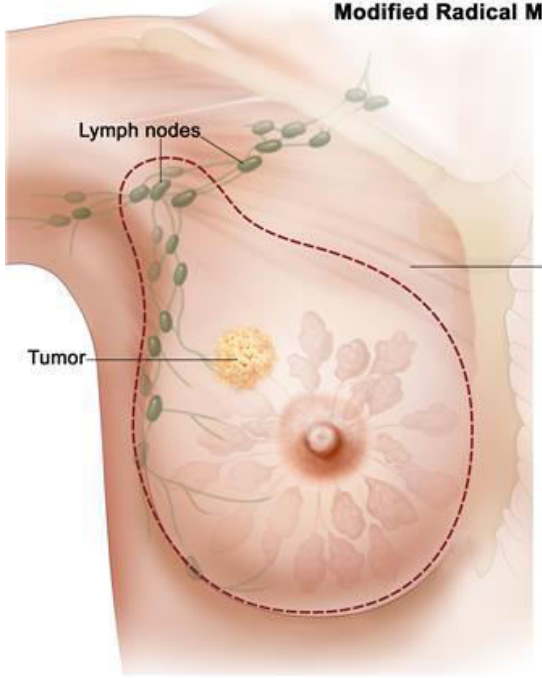
- Breast cancer surgery
- Symptoms may occur anytime e.g. immediately post operative.

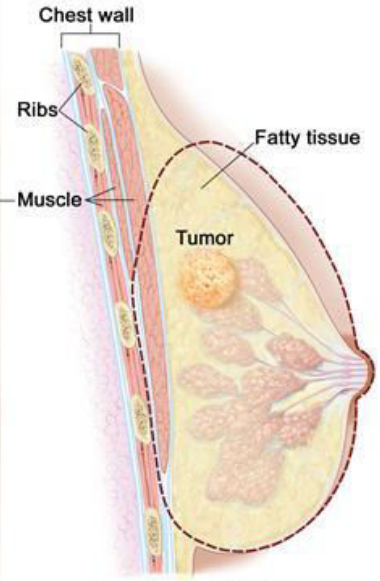


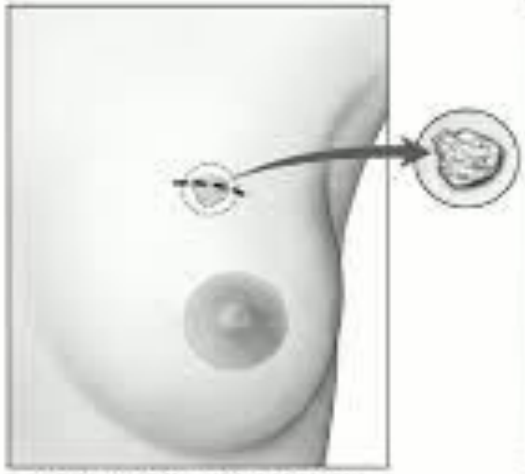
Total (Simple) Mastectomy



Modified Radical Mastectomy







The tumor is removed with a rim of normal breast tissue.

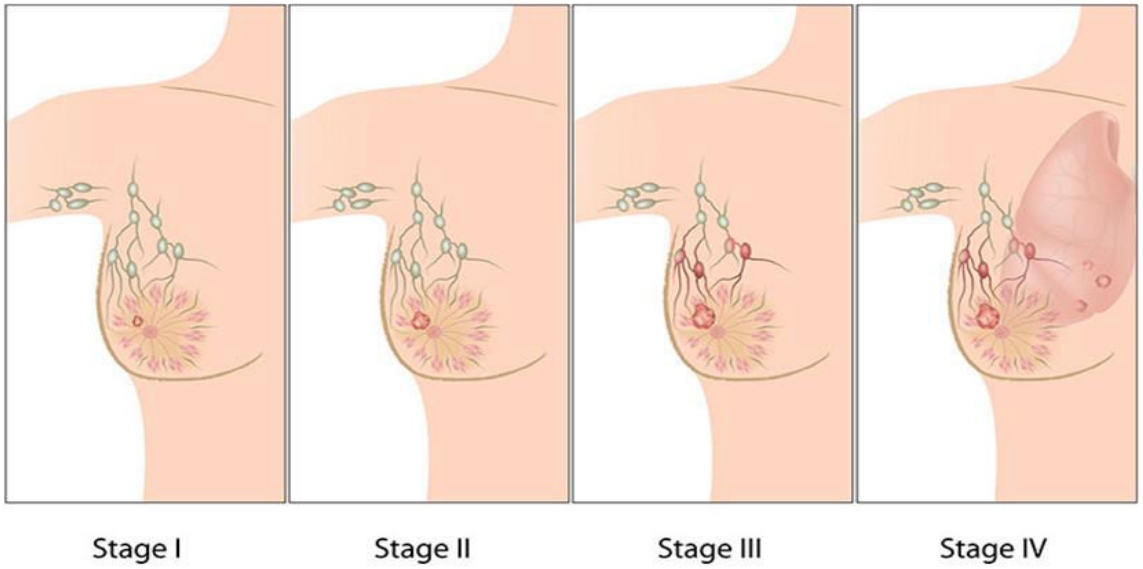
Postoperative appearance depends on the amount of tissue removed, but there will be a small scar and often an indentation in the breast.

Lumpectomy/partial mastectomy

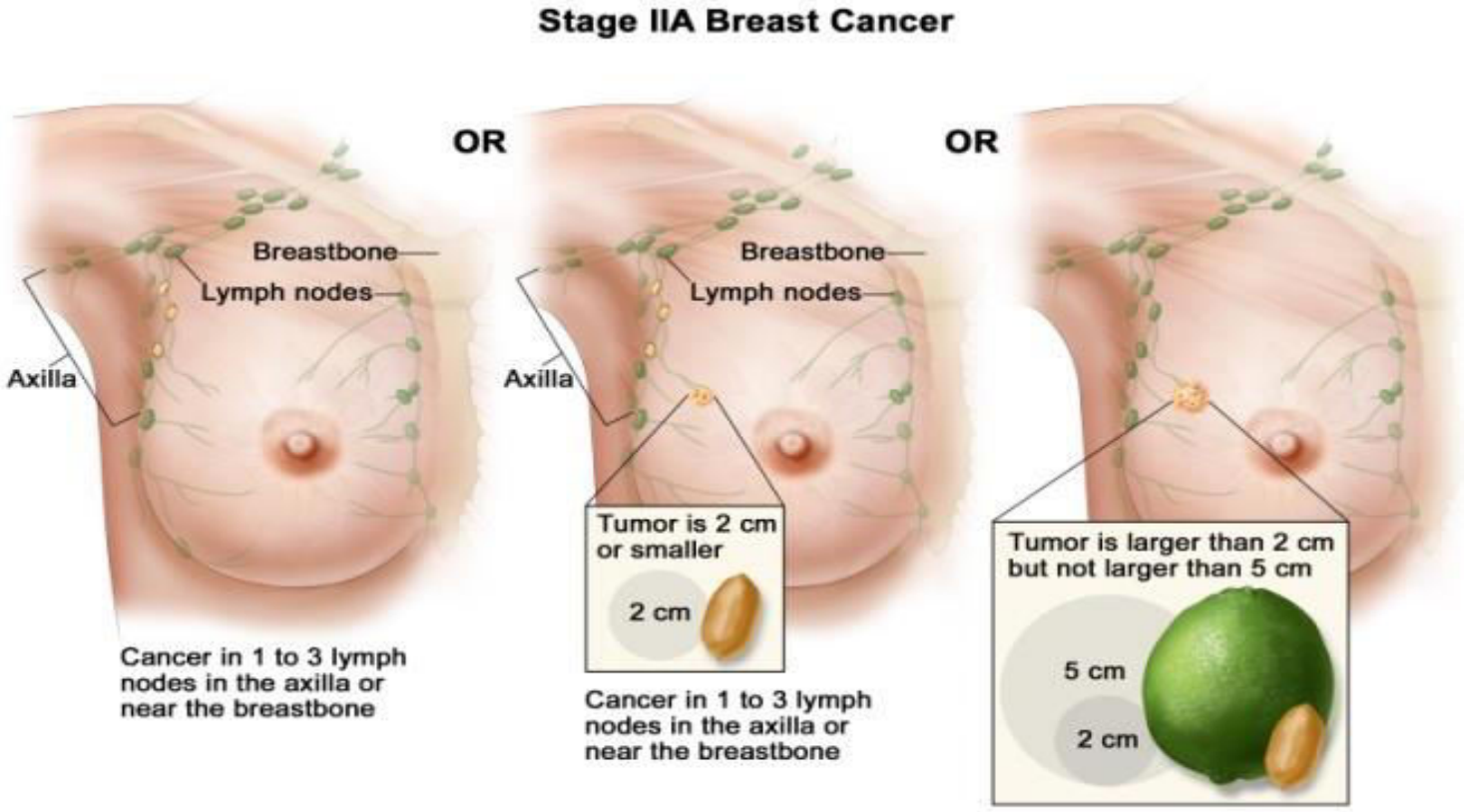
1. Disease related

Stage of a tumour and its location:

It describes the size of the initial cancer (the primary tumour), whether the cancer has spread to the lymph nodes, and whether it has spread to a different part of the body.



- Recurrence of a tumour or spread to the lymph nodes.



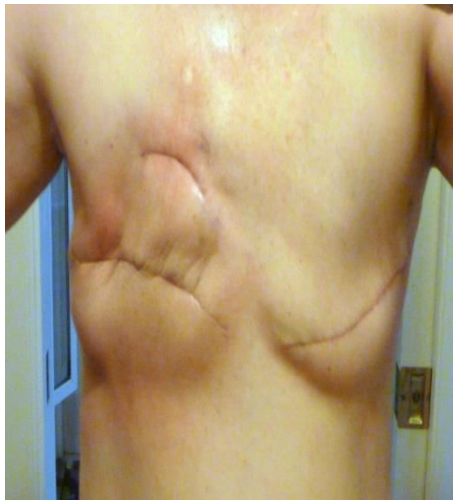
2. Treatment related

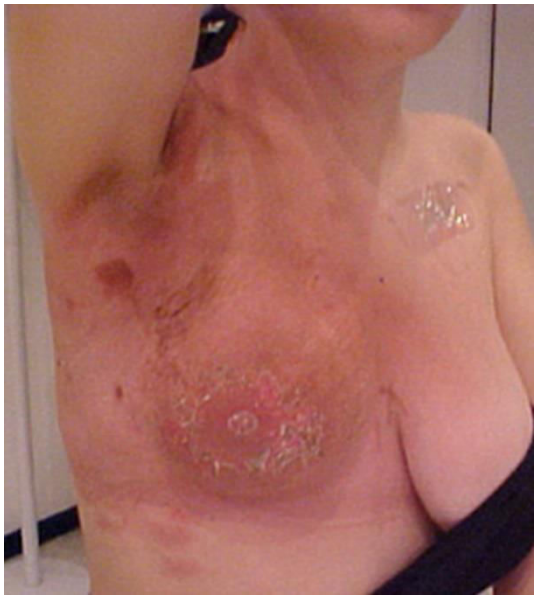
- Extent of lymph node dissection
- Drain/wound infection

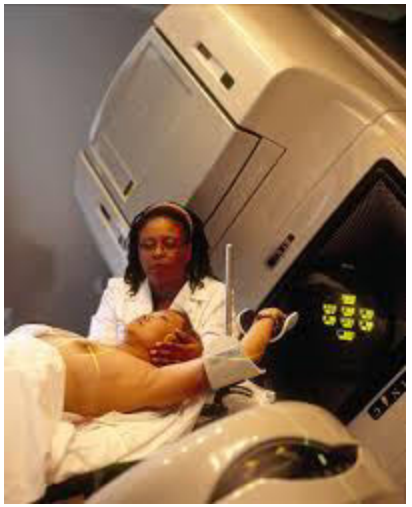
- Seroma formation:

Seroma is defined as a serous fluid collection that develops under the skin flaps during mastectomy or in the axillary dead space after axillary dissection

- Scar formation, fibrosis and radiation therapy related dermatitis







- Radiation therapy to the lymph nodes.

3. Patient related

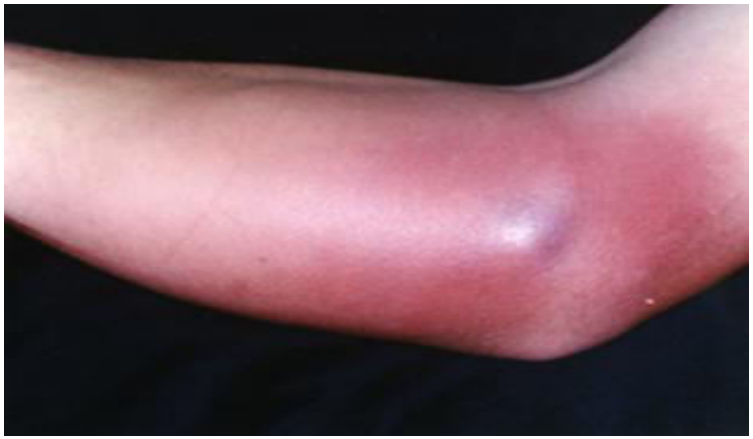
- High BMI > 30 kg/m2

- Hypertension:
  - High Blood Pressure more than 130/90 mm Hg at 3 subsequent visits.

- Older age groups (>65 years of age)

- Poor mobility:
  - Individual has a limitation in independent physical movement of one or more extremities.

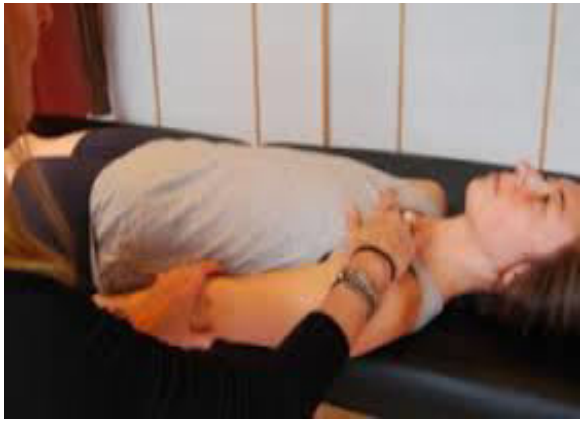
- Previous cellulitis:
  - Is a spreading of bacterial infection just below the skin surface.



Prevention and Early Detection

- Lifestyle and Prevention
- A lower incidence of lymphedema has been found in patients who exercise regularly and perform preventive self-care activities.

Lifestyle and prevention



Skin and Nail Care Tips

- Meticulous skin hygiene and nail care are essential to reduce the risk of bacterial and fungal infection.
- Cut nails straight across.

- Do not use blades for hair removal instead use electric razors

Avoid dry, cracked or flaky skin. Use good quality un perfumed moisturizer to keep the skin moist

- Cracked areas of skin should be washed, with soap and water and dried carefully

- Wear oven gloves for gardening.

- Use a thimble for sewing

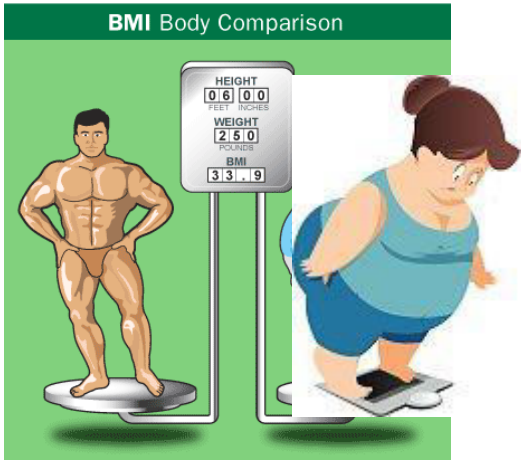
- • Avoid exposure to extreme heat or cold - use the unaffected extremity to test temperatures (e.g. for bathwater or cooking)

- Use insect repellent

- Be alert for the signs of infection (fever, swelling, redness, pain, and heat) and see your doctor if you suspect infection.

- Diet and Healthy Weight

- The risk of lymphedema increases in those who are overweight or obese.
- Maintaining a normal weight and eating a healthy diet are an important part of healthy survivorship.



- Precautions and Causes

➢ Limb exercises should begin as soon as possible after surgery.

➢ The exercises should be done slowly.

➢ If there is pain the exercises can be reduced but not stopped.

BENEFITS OF EXERCISE

- It will stimulate lymph flow from the limb and reduce the risk of lymphedema.
- It improves the range of movement and limb strength.
- NOTE:

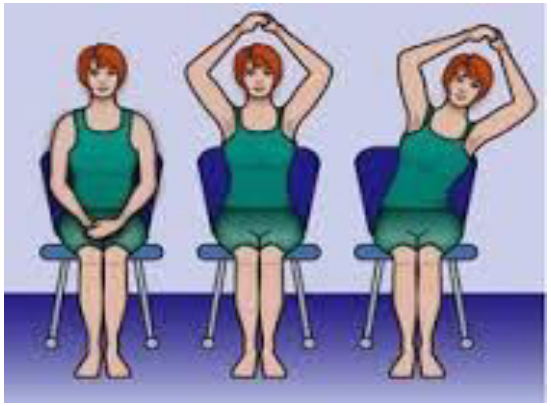
Gentle and moderate physical activity does not increase the risk of lymphedema

CAUTION

- Extreme exercise will promote inflammation and injury and should be avoided in patients at risk for lymphedema

- Travel, Sun and Heat
  - Additional precautions are recommended during long journey:

➢ The affected area should be gently exercised and elevated, where possible



- Never stay sitting for long periods when travelling.

- Drink plenty of water during hot weather

- Wear long sleeved cotton garments to protect the limbs from bites or burns

- Use of sun screen (minimum of SPF 15 – 30)

- Do not use a hot tub or put the affected limb into a very hot bath

- Never use a sunbed.

- Positioning of the Limb to Prevent Contractures

- Keep the arm elevated above the level of the heart when possible

- Do not keep arms under the affected head while sleeping.

- Do not sit in one position for longer than 30 minutes

- Do not lie in one position for a long time

- Wear loose jewellery and clothes with no constricting bands 
- Avoid blood pressure monitoring on the affected arm 
- Wear a professionally fitted comfortable bra

- Presentation of Lymphoedema
- Even patients may report a variety of symptoms, including
- Limb heaviness.

- Skin tightness.

- Itching or burning sensation

- Diminished joint movement.
- Difficulty in fitting clothing, jewellery and shoes.
- Limb swelling (e.g. deep venous thrombosis).
- Patients should be carefully evaluated for any evidence of cellulitis

- **Self-care**
- Simple self care exercises
- PURPOSE:

➢ To regain full range of movements following breast cancer surgery.

➢ Increase blood flow

➢ Arm rehabilitation

- **Exercise 1:** Wall Climbing. This is done in two positions:
- 1. Facing a wall.
- 2. Sideways to a wall.

- **Exercise 2:**This is of two types.

1. Open – Close Hands: Open and close fists at various heights.
2. Attach the necklace: These exercises should be carried out five times a day, using the affected arm to breathe deeply while doing the exercises.
3. Bring both hands to back of neck as if to attach the necklace.

Exercise 3: Attaching the Bra.

1. Breath deeply while doing the exercises.
2. Bring both hands at back as if attaching the bra
3. It may be painful but will ease while healing progresses.

Wrist Exercise

1. Sit straight on a chair.
2. Move both hands upwards at the most and then rotate clockwise and anti clockwise.
3. Take a deep breath
4. Repeat for 5 times.

Elbow Exercise

1. Sit straight on a chair
2. Take a deep breath
3. Lift arm to shoulder level
4. Bend the elbow and straighten it
5. Repeat for 5 min

Shoulder bracing exercise

1. Sit straight on a chair
2. Take a deep breath
3. Lift both arms forwards to the shoulder level with palm facing downwards
4. Bend elbow inwards towards the chest
5. Bring hands backwards along with the shoulders as far as possible
6. Hold it for 10 sec and then relax
7. Repeat for 5 min

Shoulder exercise

1. Sit straight on a chair
2. Take deep breath
3. Lift arms forwards with the elbow straight, palm facing downwards, as far as possible and then bring it down.
4. Repeat for 5 min

5. Lie on your back

6. Hold a stick with both the hands forwards, keeping the elbow straight

7. Lift the stick as far as possible and then bring it down.

Simple Lymphatic Drainage

- Lymphatic massage is extremely gentle and light. The aim of this massage is to stimulate the lymph channels in the trunk so excess fluid can drain. The skin is always moved away from the affected (treated) side. It may be easier to start with one hand, and then swap to the other as you move across the body.

Procedure:

1. Gently place your fingers on either side of neck.
2. Gently move fingers over the skin down towards the back of the neck. Repeat this exercise10 times.

3. On top of shoulder use a gentle movement around the front neck towards the top of breastbone (where the collarbones meet).
4. Repeat this exercise five times.
5. Starting in the armpit on the non-operated side, using a light pressure, gently stretch the skin up into the armpit.

6. Keeping hand flat and gently move over the skin to the opposite arm-pit.
7. Repeat five times.
8. Slowly stretch the skin towards the non operated side.
9. Repeat five times.

- Complications:

➢ cellulitis

- Inflammation of the lymphatic vessels

- Deep venous thrombosis


Thank
You!